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Glen I. Misek
Editor

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Foreword

This is the eighth annual edition of Socioeconomic Issues of Health, commonly referred to as the "Blue Book." This volume and its companion, Profile of Medical Practice, (the "Red Book") are intended as quick reference guides for use by health professionals, policy makers, researchers and journalists. Each brings together in one convenient source, a combination of relevant essays and current data concerning the health care delivery system. Data included in the "Blue Book" are principally abstracted from private and government sources, while the data in the "Red Book" are primarily collected by the American Medical Association. Papers contained in each book include the contributions of authors from the research community at large as well as health researchers within the Center. The views expressed in the articles are the author's interpretations of the issues discussed and are not intended as statements of AMA policy.

The Center for Health Services Research and Development trusts that this edition of the "Blue Book" will be useful to all individuals with a general interest in the socioeconomics of health.

Lynn E. Jensen, Director
Center for Health Services
Research and Development
American Medical Association

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Note to Prospective Authors

Socioeconomic Issues of Health seeks to provide a forum for policy related research pertaining to the health care system.

Manuscripts: Authors who wish to submit an article to be considered for inclusion in the ninth edition of Socioeconomic Issues of Health should provide (3) complete copies of the paper no later than December 31, 1979:

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A copy of the style manual for Socioeconomic Issues of Health can be obtained by writing to the above address. Manuscripts will be submitted to referees and the author will be informed of the decision shortly after the receipt of the paper.

Part I
Selected Papers

Political Economy of Health Care in England
*by Kenneth Lee**

INTRODUCTION

There are many characteristics differentiating UK and USA approaches to medical care provision which make the transfer of ideas a particularly hazardous business. Lessons and insights gained in one health care setting may not, in consequence, readily relate to those in another, and conditions which may be regarded as conducive to particular organizations and patterns of care in one environment may not be present in other settings.

Yet, it can be argued that there are a number of issues common to both systems which would benefit from such an interchange of ideas. Believing this to be the case, this paper addresses a number of key issues facing the National Health Service (NHS) in Great Britain at the present time, ones which in varying degrees appear to be present in the USA. Specifically, problems of finance and attendant notions of cost containment; "quality" of service and the difficulties of productivity measurement; priorities in health care distribution; bureaucracy and power relationships; professional and consumer participation; and developments in planning for health and health services. By tracking some of these historical and underlying issues in England, discussion focuses on recent changes in the NHS system and on some of the expected responses to these changes in the years ahead.

BACKGROUND

The 5th of July, 1978 was an important date in the English calendar, for it marked the thirtieth anniversary of the establishment of the NHS. The decision to introduce a national service was taken by the war-time coalition government in 1944; legislation under a Labour Government followed in 1946 and came into force in 1948, despite misgivings in some quarters and hesitancy in others. It represented an attempt to reconcile the sensitivities of the doctors, the local authorities, and the voluntary hospitals with the considered needs of the population.

For all of these thirty years there has been broad agreement among the political parties as to the basic principles of the NHS. These are:

---

*Kenneth Lee, M.A., is Lecturer in Health Economics at the Nuffield Centre for Health Services Studies, University of Leeds, England. The views expressed in this paper are those of the author and do not necessarily represent the official policy or position of the American Medical Association.

a) a comprehensive health service available to the entire population;

b) universal access to the general public when they need it;

c) medical services provided free at the point of consumption, without regard to individual means;

d) finance to be largely from general taxation, eschewing any insurance principle;

e) the transfer and national ownership of all non-profit voluntary and local authority hospitals; and

f) the preservation of personal and professional freedom for the patient and for the doctor.

In short, the object of the proposals was to make available to everyone in the UK a complete range of medical services largely free of charge, irrespective of the person's financial standing or health record. It is this claim, as outlined in the 1944 White Paper:

> to ensure that in future every man and woman and child can rely on getting all of the advice and treatment and care which they may need

which has caused the NHS, since its inception, to be the frequent target for both praise and condemnation.

Certainly, with hindsight, it is possible to conclude that the founding fathers were too idealistic in their claims of "providing coverage from the cradle to the grave," and of ensuring that "all wants are satisfied and all needs met." The myth was that one had only to temporarily increase the investment in health services and then, when the nation was fit, expenditure would flatten out and even drop. The truth of the matter is that demographic pressures and technological advances continue to breed further needs and expand further requirements.

In another respect, it can also be argued that the NHS was a flawed masterpiece. The structure of the NHS in 1948 was the product both of historical evolution and compromise. The effect of decisions made at that time was to create a number of administrative structures providing, respectively, family practitioner services, hospitals and specialists services, and, thirdly, a range of community and personal support services. This tripartite structure, though frequently seen to have its problems, remained in being until the reorganization of the NHS in 1974, at which time hospital and community services were "unified" while leaving the structure of family practitioner services largely untouched.

To bring the story up to date, since 1974 not only the internal stresses and strains to be expected from creating this new structure have been apparent, but also the continuing difficulties and uncer-

tainties surrounding Britain's weak economic position internationally. Galloping inflation, political uncertainty, debilitating labor problems, disputes over private medicine and doctors' pay, growing unrest and discontent about the slowdown in the growth of NHS expenditures culminated in the decision to set up a Royal Commission on the NHS. By May, 1976, membership decided, its terms of reference were set down thus:

> to consider in the interests both of the patients and of those who work in the National Health Service the best use and management of the financial and management resources of the National Health Service. (HMSO, 1976, p. 1)

The Commission was under no illusions that the NHS faced great problems and challenges, and saw its task as helping the NHS to meet the future successfully. This Report will be published in late 1979. However, few seriously doubt that the Commission will reaffirm the basic principles upon which the Service was established back in 1948.

RECENT TRENDS IN THE NHS

Spending on the NHS can be viewed in both its historic and international contexts. At 5.7% of GNP, NHS expenditure was higher in 1978 than in any previous year of its history (3.9% in 1951); the Service is also now employing approximately one million personnel. Despite this growth, the United Kingdom still spends far less of its income on health services than other comparable Western European nations, and spends proportionately far less than the 8.8% of the USA. This record can be interpreted in at least two ways: either that the U.K. has attached rather less importance to health services than other developed countries; or that she has been rather more successful in containing the costs of providing such services.

Whichever explanation is more likely, domestically the NHS has managed, over thirty years, to more than double its real spending and to increase by nearly 50% its proportion of the GNP. Specifically, the number of in-patients treated in English hospitals reached a new record figure of 5,345,000 in 1977, the last year for which figures are available, compared with 4,722,000 some ten years previously (DHSS, 1978a, p. 28). This was achieved at the same time as a decline in the number of available hospital beds from 434,000 to 376,000 and was achieved while still reducing the average length of stay - excluding long-stay cases - from 12 to 9 days. In other words, despite fewer hospital beds, it has still proved possible to treat more patients.

Furthermore, mortality indices reveal that England may be getting better results from less resources than other nations. The infant mortality rate per 1,000 live births, often regarded as a key indicator of the level of health in the population and, by implication, a measure of the effectiveness of the nation's health care delivery system, shows England and Wales with a rate of 14.3 in 1976 (USA 15.1). Expectation of life figures are also comparable, with the

relevant figures in both the USA and UK of 69 years for men and 76 years for women (DHSS, 1978b, p. 22).

Perhaps, not too much should be made of these figures however. There are difficulties in interpreting this type of cross-national data, such as isolating the contributions health services make to health, apart from those of other factors such as environment, diet and personal behavior. Also, national trends tend to disguise what may be more significant movements, for example by age, sex, region or social class, within them. Equally, while the NHS has been treating a record number of hospital in-patients, more and more patients are waiting to be admitted. Indeed, the total number of patients' names recorded on hospital waiting lists has increased by 25% since 1948 and now stands at more than 600,000 patients.

NHS FINANCING

All countries have to ration their health services; the English NHS is no exception. A system that attempts to offer a comprehensive service free at the point of consumption must, of necessity, develop mechanisms to reconcile unlimited needs with finite resources. The question to be asked is: what is the best way of rationing?

At present, the ability to control NHS expenditures rests largely upon a budgeting system which sets cash limits in advance upon the majority of NHS expenditures; those working in the NHS are then expected to live within these limits. Thus, by imposing these limits the government ensures a maximum expenditure on the services during the forthcoming fiscal year (Lee, 1977). Certainly, in the last three years, these cash limits (or "caps") have proved effective in restricting NHS expenditure to the global sum agreed centrally by Parliament. What is also certain is that this approach is far easier to implement under a national health service funded from general taxation, than it is under other alternatives, where there is no effective ceiling to expenditure.

Containment of overall costs is not, therefore, a serious problem in England, though tight central control over NHS expenditure has also generated accusations of "under-funding" from various groups in society. For example:

> the national health service and the personal social services are under-financed and have always been under-financed compared with other comparable services (Labour Party, 1977, p. 10); and
>
> Although there may be virtually no limit to the resources a country can justify devoting to health services this is no reason why this country should be satisfied with a level that is hopelessly inadequate. (British Medical Association, 1977, p. 22).

Solely on the basis of these statements, it is all too easy to assume that the question of under-funding is a purely British phenomenon whereas, in practice, under-funding is a chronic condition facing all countries. It must be expected, therefore, that the NHS - like other health services - will have to learn to live with it, and adapt accordingly.

Yet, the willingness to adapt may be weakening in the face of growing pressures to place less of the direct cost of health care services upon the public purse. All manner of ingenious ways of supplementing the monies of the NHS have been suggested recently to the Royal Commission. Some involve charges to patients to meet, for example, their "hotel" costs while in hospital (bed, linen, and food). At present, direct charges to patients in the form of prescription charges, dental treatment fees and the cost of eyeglasses contribute approximately 2% to the NHS budget. Some schemes involve insurance. Others involve fees for certain items of service. Still others suggest some form of compulsory state insurance. Changes in finance may be imminent, but no British political party has yet been prepared to risk the political damage inherent in radically changing the thirty-year-old concept of a free health service for all.

There has, however, been one primary issue which has been the focus for protagonists both inside and outside the NHS: private medical practice. The availability of private pay beds within NHS hospitals has survived as an uneasy compromise between political and professional principles for nearly three decades. Although information is incomplete about private practice, it would appear that about one million persons are in receipt of private insurance which means that, including relatives, upwards of two or three million persons are "covered" in total. It is difficult to speculate about the trends in private medicine. Any forecasts are heavily dependent upon assumed future supplies of private medical facilities together with the incentive of patients receiving immediate treatment rather than joining a waiting list. Other things being equal, failure to reduce waiting lists is a potent stimulus to the private sector.

In fact, it is the elective surgical operation that the private sector sees as its main market - people whose condition would allow them to choose when and where to be treated rather than join a public waiting list. This is what private patients are prepared to pay employers for or, more accurately, what employers are prepared to pay who, given government restrictions on pay increases, now more frequently offer their employees and families fringe benefits in the form of membership in various private health insurance schemes. Apparently, the private sector may now account for ten percent of all elective surgery (Ball, 1978).

QUALITY OF CARE AND PRODUCTIVITY MEASUREMENT

Limits will still exist on the amounts any government, agency or individual feels able to allocate to health care. Hence, two features

assume particular importance: the containing of costs and obtaining better value from existing resources. A central question then becomes one of who should be accountable and who should control costs.

In this regard, physicians have a unique role in determining the use of hospital resources. The right of clinical autonomy allows them, within the quantum of resources available, to determine which patients are in need of hospital care and to coordinate the activities of other clinical professionals, they are the major determinants of how resources are used. As a former Minister of Health wrote:

> Doctors themselves are economic decision makers to an extent which few people realize. In 1975/76 the average general practitioner, and his team, controlled resources worth 25,000 Pounds ($50,000) per annum. In 1975/76 the average consultant, his team, and nursing and professional colleagues controlled resources worth about 1/4 million Pounds ($500,000) per annum. (Owen, 1976, p. 533)

Yet, despite the effective control of NHS expenditure at a national level, at the local level the NHS's clinical staff is seldom accountable for the cost of the service it provides. In one sense there has always been a conflict at the heart of the National Health Service. On the one hand there is the notion of clinical freedom; on the other hand there is the fact that the Service is financed by public money for which, normally, accountability is required. Whether these two concepts are compatible and which should take precedence are questions which have come to the fore at the present time.

It is ironic that the publicly funded and publicly owned British health care system has fewer controls on the use of clinical services by physicians than that existing in the U.S. Terms such as "utilization review" and "quality of care audits" are largely unknown in England. A substantial number of clinicians still feel alienated from any involvement with "saving money," finding it both incompatible with their attitude to medicine, and causing a further load on their already overburdened time:

> Accountability for performance is weakened by the autonomous position of clinicians. Attempts to involve them in management through representation and consultation have not failed. But these have not been conspicuously successful either. (Brown, 1977, p. B15)

Certainly, clinical freedom is often cited as one reason for not considering economic consequences. The doctor-patient relationship is rightly valued by both sides. But the current "freeze" on growth in the NHS, when combined with evidence of over-utilization, which leads to bigger differences in care both within and between types of patients, might point toward the merits of reviewing the "need" for and the "use" of health services (Lee, 1979a). As Brown (1977, p. B14) remarks:

> the pretence that clinical work in the NHS is simply state-financed private practice is not tenable today. It only confuses the issue to pretend that clinical autonomy in the treatment of individual patients exempts doctors from any form of accountability for their contribution to the achievement of NHS objectives.

It could, therefore, be argued that clinical freedom requires the involvement of doctors directly in the decision-making processes at all levels of the NHS. Since the medical need is limitless, someone somewhere has to choose. Such choice is unlikely to be an enlightened and considered process, however, in the absence of corresponding improvements in the recording and collecting of accurate information describing utilization at the clinical level. It may be a close approximation of the truth to state that, at present, physicians and management can only guess at how resources are being used. Indeed, because the NHS is largely free at the point of consumption, little attention has been given to collecting information about items of service. In contrast, data collected for billing purposes in the U.S. makes review of utilization patterns that much easier.

Yet, even if the information concerning the utilization of clinical resources in England were better, the question remains as to whether and under what circumstances it would likely be used. What distinguishes expenditure controls in the NHS from those in the private sector includes:

> the preservation of clinical freedom, the lack of quantifiable outputs, the absence of any management hierarchy amongst senior doctors - and the priority rightly accorded to the continuing search for medical excellence and innovation. (Wickings, 1978, p. 23)

Here, lack of information is not the main problem. Lack of incentives to improve efficiency - and in some cases considerable opposition to any new methods of working - may be far more serious factors.

Without, therefore, an acceptable and effective incentive structure, the provision in England of more hospital cost data may prove to be an abortive exercise. That this is not an unreasonable scenario was demonstrated recently by the Chief Medical Officer in his foreword to a collection of papers studying the use of health resources by clinicians:

> I cannot pretend that it is likely to be read by the majority of doctors but if it generates interest among even a small nucleus of colleagues who had not thought the subject relevant or interesting then it will have succeeded (Department of Health and Social Security, 1978c, p. i).

The scope for pecuniary rewards, or penalties, to doctors to limit costs and improve productivity has hitherto been considered as either limited or unnecessary. It could, in fact, be said that the NHS appears

to be too poor to afford the carrot and too weak to apply the stick. In consequence, the objective of influencing clinical behavior in ways that are acceptable to both physicians and society is unlikely to be immediately realized.

PRIORITIES AND RESOURCE ALLOCATION

It might have been expected that the first thirty years of the NHS would have been characterized by uniform direction and innovation from the center. In retrospect, neither can be said to have happened. Indeed, the term "National Health Service" has been criticized because it is said that the Service is not truly national since some parts of the country and some sections of society enjoy a more generous provision of services than others; and because it does not concern itself in the main with health, but rather with the treatment of ill-health and the care of those who are sick. On both counts, it can be argued that a disturbing feature of the past thirty years has been how little change has occurred in NHS spending patterns.

Discussion of priorities is, of course, complicated by the problem of deciding whose priorities are relevant, and how priority is actually defined. The desire to achieve a more equitable distribution of resources was a basic force in the creation of the NHS. More than thirty years later, the NHS is still groping its way forward to the achievement of this aim. As expressed by Godber (1976, p. 12), the problem is: "To find the justifiable mean that permits the greatest good for the greatest number and does not tend to excessive refinement in either treatment or diagnosis."

One area which the NHS has begun to question is the growing concentration of resources within the hospital sector. NHS statistics show that over the period 1951-1976 the amount of hospital services consumed increased from a little over half to around two-thirds of all NHS resources. In consequence, for instance, general medical services accounted for nearly 11% of NHS outlay in 1953 but dropped sharply to 6% by 1976. This raises the question of a just allocation of priorities to the various functions representing the health care system (e.g., as between hospital and primary care services, or between curative and preventive services), and the need for equity in the distribution of resources.

The relationship between the removal of financial barriers to health care and actual utilization rates is neither simple nor, necessarily, direct. The main gap in public policy, until recently, has been a rationing system which concentrates on equity defined in terms of resource provision. Hence:

> equality of access, and equality of facilities for different social classes, geographical areas and disease categories, while undoubtedly reflecting, as objectives, the ideas of the party and the government that brought the NHS into

being, have proved more difficult of realization than might have been imagined in the early days (Watkins, 1978, p. 157).

Although regional differences persist, whether measured in terms of expenditures, beds, or manpower per capita, variations in resources can only be used as a very rough and ready indication of variations in the provision and availability of health care. There are, for instance, striking differences in death rates in the various English regions, but the largest and most worrying differences are in mortality (and morbidity) between the social classes. Differences in morbidity by social class, social class differences in perception of symptoms, class differences with regard to health-seeking behavior and illness behavior, and differences in the take-up of medical services and their organization are all involved.

That there are substantial geographical and social maldistributions of staff and services is beyond dispute. In theory, England, with a single source of finance and a unitary organization, has the potential for spreading services so that all can use them. And yet, in practice, inequalities have characterized the NHS since its inception whereas explicit policies to redress them are only recent. Current policy, through the work of a Resource Allocation Working Party, has attempted to align available resources with the need for care. Debate thereby centers around the criteria for determining "need" and the pace of implementing change (Royal Commission, Research Paper No. 3, 1978). Questions are still raised over the specific mechanisms by which resources are allocated from the center to the periphery, though the likelihood of such mechanisms being even considered - let alone implemented - in other countries is, to say the least, more remote.

In England, it has become increasingly recognized that, given the enormity of the tasks in health care provision and the magnitude of the resources involved, it would seem imprudent, at least, to leave major matters entirely to chance or to the uncoordinated actions of numerous bodies. Specifically, a corporate planning system has been developed and introduced into the NHS involving both the Department of Health and Social Security (DHSS) and Health Authorities. The declared intention is to combine decentralization with strategic direction, by matching the political and financial accountability of the Secretary of State to Parliament with a recognition that national policies need adaptation if they are to be made relevant and capable of implementation at the local level.

This new popularity for health planning and its apparent acceptance as a viable way of improving health services and, presumably therefore, health, is accompanied by high expectations. Few deny the usefulness of planning, but controversy does exist over what form planning should take, its range, scope, and likely effectiveness (Lee, 1979b). Included among the major issues currently being addressed in England are: the status of "central" guidelines; the sanctions available to redirect capital and revenue resources geographically and by care

sector; and the incentives available at the local level to encourage closures and other forms of resource redeployment and retrenchment. Critical to the success of any policy is a healthy recognition of the influence key actors hold in policy making, given that the pluralistic nature of NHS decision-making compounds the problems of public accountability.

BUREAUCRACY AND POWER RELATIONSHIPS

From what has been said, it can be seen that it would be a mistake to perceive the NHS as monolithic and over-centralized. Any organization which is centrally funded by government, with delegated local health authorities, which absorbs nearly 6% of the GNP, and is the largest national employer, must have its bureaucratic and administrative problems. Public expenditure plans do shape and constrain the behavior of the NHS. Yet, it must remain a question as to how far central policy stands as an exhortation to change with little chance of being translated into local practice.

Some discretion at the periphery is essential. The problem is how to reconcile this with accountability to "higher" political levels. In other words, is there a way of reconciling the contradictory centralizing influences of national finance, parliamentary accountability and the desire for uniform standards with the equally pressing demands for decentralizing decision-making to cope with different local needs and aspirations? On the one hand, it is a matter of how far central government can go, ought to go, and indeed, is prepared to go in deciding national priorities and ensuring their implementation at the local level. On the other, it is a matter of how far local groups will sacrifice their institutional arrangements and commitments to comply with national guidelines to ensure that their plans get funded.

It may, of course, be that the practicability or feasibility of reconciling conflicting goals becomes easier at higher levels in the hierarchy, where sectional interests may not be so readily exhibited in terms of who gains and who loses. Yet, it is important to again emphasize that, although central government can alter the flow of funds into the system, the effective translation of plans into a set of actions still depends upon the behavior of individuals and groups in specific locations.

Any structural reorganization at the local level is likely to create problems of adjustment to new patterns of working and, in particular, to new interpersonal relationships. Paradoxically, many of the present anxieties concerning "bureaucracy" and delays in NHS decision-making are the results of attempts to "democratize" the service by involving as many groups as possible in the participative and consultative processes. Undoubtedly, problems of attempting to manage by "consensus," which means no one professional group can outvote the other, have their time costs - and yet, if consensus is achieved, decisions reached are likely to hold firm. Nonetheless, it cannot be denied that:

> the multiplicity of levels, the over-elaboration of consultative machinery, the inability to get decision-making completed nearer the point of delivery of services, and what some describe as unacceptably wasteful use of manpower resources were recurrent themes in most of the areas where we worked (Royal Commission, Research Paper No. 1, 1978, p. 231).

leading one research team to conclude that - within the present structure - it was unlikely that decision-making could be efficient. Yet, others would question whether a "management" model is appropriate to a human service like the NHS:

> Injunctions to be rational and hierarchical are of little use to those struggling to cope with a complex, and uncertain, environment in which the appeasement of competing, and equally demanding, interests takes precedence over attempts to plan and set priorities which reflect the needs of local populations (The Outer Circle Policy Unit, 1978, p. 4).

To a large extent, these attempts to plan and set priorities have to be linked to trends such as the emergence of new professional groups - challenging the traditional preeminence of the medical profession - and stronger unionization. In the early years of the NHS, industrial relations problems were by no means acute. This has altered since 1973 when the first major nationwide strike took place. Trade union membership has recently expanded and militant local officials have asserted leadership in the hospital situation against, in some cases, the wishes of their national officials. In consequence, local bargaining has brought industrial relations out of its wholly national context and into the workplace situation, thereby generating local conflict. However, trade unions and union officials are not only bargaining for higher wages and supporting previously unheard of "official" strikes, but appear to be seeking a share in determining the direction of the NHS organization, nationally and locally. For instance, union militancy over the level of resources, including staffing, in long-stay hospitals is assisting a shift of resources to the underprivileged sectors of the NHS; even if, short-term, this causes actual discomfort to patients.

MORALE AMONG PHYSICIANS

An organization of the size of the NHS is bound to experience internal conflict at one point or another in its structure; indeed some organizational tension can be seen to be healthy. The activities of the NHS will continually involve compromise among conflicting interests, but the question often asked at the present time is whether the level of dissent and discontent within the NHS has now reached an unacceptable level. According to at least one source, the evidence is there for all to see:

> Morale is evidently poor and the reorganization is often blamed as a contributory factor; criticism of faceless but burgeoning bureaucracy is commonplace. The almost continual labour problems in the NHS, high labour turnover and sickness absence, the dispirited air of senior administrators, and the pre-occupation with internal organizational questions noted by almost all outside observers are persuasive indicators of poor morale within the Service. (McKinsey and Company, 1977, p. 2-2).

Nowhere has a recent decline of morale been so clearly exhibited than among the medical profession. The reasons are several and touch on aspects of remuneration, clinical freedom, organizational responsibilities, and status changes within and outside the NHS. To recover from the low ebb of morale may prove difficult, especially when the concerns also call into question the very existence of State involvement in medical care.

In the first place, there is and always will be a potential tension between the doctor's duty to his own patients and the State's duty to provide treatment to all those requiring medical attention. There is no doubt that difficulties exist in reconciling the traditional clinical freedom of medicine with government's responsibility to taxpayers and the total population. Why and how should this conflict between the uniqueness of individual life and the collective good be decided? An NHS based on the principle of universal access has a duty to see that once a new development has been recognized as effective its use should be extended nationwide.

Nationwide, therefore, it might be expected that the gap between the average and the best is relatively small, but is it at the expense of experimentation and innovation? Certainly the responsibility for deciding upon effectiveness is more onerous in a system funded centrally, where all parts of the kingdom may reasonably expect the same range and standards of care. Caution is necessarily a virtue and a necessity in the NHS in order that new patterns of delivery may be discouraged if considered not yet proven, as with open-heart surgery or mobile coronary care in recent years. When such caution is coupled with the more modest expectations of funding from general taxation and redeployment of resources to the "underfunded" sectors, then morale, particularly in the field of acute hospital practice, might reasonably be expected to falter.

What has exacerbated the situation recently has been the dispute with leaders of the medical profession over the future of private medicine (in part, at least, a pay question) and with junior hospital doctors over salaries. As far as income is concerned, the view is widely held that the rewards of long training, skill, and weight of responsibility are steadily being eroded and depressed by successive government income policies, so that they are now seriously out of line with those in the European Community and in North America. The medical profession in general, and hospital consultants in particular,

have been the victims of a policy aimed at leveling up (or down) relative income; that they have steadily slipped in the earnings league is indisputable. Longer term, in an attempt to secure what they regard as "decent" rewards, doctors and the DHSS are drifting toward "fee-for-service" as a substitute for increasing basic salaries.

This progressive decline in the hospital consultant's economic position has been accompanied by government attempts to involve itself more closely in the practice of private medicine - specifically, to separate facilities for private practice from NHS hospitals. This attempt to phase out private practice demonstrates all too clearly, to many members of the medical profession, the vulnerability of their bargaining position with a monopoly employer - short of emigration. In consequence: "We have paid too high a price for the ideological conflict on this issue (of pay beds) during the last five years" (Godber, 1979, p. 23). Whether the blame can be attached solely to government, or whether it should be shared with a section of the medical profession, it is beyond dispute that reaction on this issue exemplifies the concern felt by doctors to their declining status.

Pay may, therefore, be a symptom rather than the root cause:

> perhaps the underlying, often unconscious cause for the decline in morale, can be seen in the general perception by hospital specialists that they are being threatened in the traditional status by social change all around them, which is challenging their previously undisputed authority in the hospital situation. (Chester, 1978, p. 12)

It is this hypothesis that finds support from the British Medical Association (1977, p. 7) which considers: "The old trusting relationships between health workers are disappearing, with the doctor increasingly regarded as just one of a team, though he is still expected to assume total responsibility in the eyes of the patient and of the law courts."

Organizational difficulties and relationships may, in consequence, have contributed as much as anything to the sense of extreme frustration among doctors practicing in the NHS. The dilemma for the medical professional is a real one: namely, whether to be inside or outside of the management structure. Practicing clinicians were brought more firmly into the management system as a result of reorganization in 1974; indeed the concept of team management has meant, constitutionally, the opportunity to veto proposals which are promulgated by other professions on the team. The price of this power is that it necessarily involves a heavy workload and proliferating committee structures, though in part that was only achieved through the political pressure applied by the medical profession itself. The fear among doctors is that, in consequence, both they and the health service will become progressively more preoccupied with the processes of management and progressively less concerned with the actual delivery of health care, as the following quotation clearly illustrates:

> It is essential that doctors should play their full part at all levels in the machinery, both advisory and administrative, for running the NHS. Nevertheless, this represents a considerable, sometimes intolerable, drain on the time and energy available for the doctor's professional duties. (British Medical Association, 1977, p. 21)

CONSUMERISM

It could be argued that in a National Health Service what is required is a strong "consumer voice" to bring out into the open choice decisions previously handled by in-fighting within the Service. Whether required or not, as Yellowlees (1978, p. 48) remarks:

> We need to appreciate that this is an age when authority is automatically questioned. One result of this has been that doctors have had to learn that most patients wish to be regarded as full members of the health care team, with the right (and commonly the knowledge) to question medical decisions.

The creation of Community Health Councils (CHCs) in 1974 was an attempt to provide such a voice, though views differed as to whether they were or could be made effective. It could be argued that the mere existence of CHCs is in itself a valuable influence upon those working within the NHS, leading them to be more sensitive to local interests and feelings than might otherwise be the case. Others question this perspective and consider that, although their existence as CHCs guarantees them greater visibility, they will still be unable to exercise much effective leverage on the system against established professional and political interests.

Even where the scope for leverage exists, it is difficult to see the "consumer" in the abstract. Locally, community health councils may be able to do no more than articulate the views of some sectors of the public. But as Klein (1974, p. 328) remarks, "One of the interesting questions about their future development is just how representative they will turn out to be: for which groups of the population they will speak"; for "To talk about public or consumer opinion is to chase a very elusive butterfly of a concept."

It would appear to be almost as difficult to elicit the views of the public on their levels of satisfaction with the NHS. One area where one might reasonably expect dissatisfaction to be self-evident is in being denied treatment, or in being kept waiting for hospital treatment. Reference was made earlier to the fact that, despite increases in the total number of patients treated each year, NHS waiting lists are no shorter and, indeed, have even lengthened. For every ten in-patients treated there is at least one awaiting in-patient care. However, it was also noted that there will always be waiting lists for non-urgent cases in England, so long as the basis for rationing is by "standing in a line" rather than by price.

Waiting lists are a poor indicator of the true pressure of demand. Indeed, like a queue at the cinema they can reveal success rather than failure. Nonetheless, to those kept waiting or denied, the queue does not so much indicate success as failure. Thus, for example, a recent survey of some 800 in-patients (Royal Commission, Research Paper No. 5, 1978, p. 31), concluded that:

> Overall, one in five patients were distressed or inconvenienced by the wait for admission, but among those who had waited for over three months this proportion rose steeply to one in three. The distress was generally attributed to the pain caused by the patient's condition, with only a small proportion being worried about finding out what was wrong with them.

This contrasts sharply with the evidence of a related survey of some 2,300 out-patients, where the delay in waiting for their first appointment causes nearly half of them considerable anxiety. Uncertainty breeds apprehension, and an undiagnosed ailment is seemingly no exception.

Comparable evidence is not yet available on general practice, though a recent survey of access to primary care in two contrasting communities reported that most patients expressed satisfaction with their general practitioners (GPs), and concluded: "On the whole, while always capable of improvement, the NHS did provide an accessible primary care service which was generally appreciated by its users. (Royal Commission, Research Paper No. 6, 1979, p. 57). This viewpoint contrasts sharply with that of the Labour Party (1977, p. 35), hoping that the Royal Commission: "will disregard the evidence that most people are satisfied with the services of the family doctor. Those who have known no better are greatful (sic) for any service."

In terms of access, members of the public are not normally allowed to contact hospital specialists directly but must go through a GP, and most GPs in turn must refer them to the specialist for admission and further services. In consequence, general practice and hospital practice might be expected to conflict unless they have an accepted modus vivendi, and equally are acceptable to the general public. According to Godber (1979, p. 24) "the separation of the generalist and specialist roles was crucial to the economy of the NHS and resulted in a confident relationship between them." Whatever the evidence that can be brought to bear on this subject, it would appear fortuitous that such a separation might now enable England to be well placed to rekindle interest in primary care services, prevention, and health promotion, an issue considered below.

ECONOMIC FREEDOM, LIFE STYLES AND THE NHS

Inevitably, this paper has concentrated on the problems. This is not due to any desire to be negative but to be able to concentrate on areas where improvement and change are necessary and possible.

Nevertheless, in a number of important respects, the NHS can be viewed as a success. The proportion of the GNP devoted to the NHS has risen from a nadir of about 3.5% in 1954 to 5.7% in 1978. This growth, while not as high as that enjoyed by other public services or other countries, has enabled a considerable expansion of NHS services to take place. But, at least to this writer, two issues remain unresolved and are issues faced by other developed countries. These concern the relationship between the individual and government in determining the expenditure choices in health care; and the responsibilities of government vis-a-vis the individual in matters concerning healthy living.

At one level of political philosophy it is a debate about the role of government in economic life. In England, the size of the NHS budget depends crucially upon the "healthiness" of the British economy. In other words, the NHS has had to operate in a situation in which it has seemed appropriate for the Treasury to use the NHS budget as a regulator of the general economy. Recently, the burgeoning case against public expenditure would seem to be based on the assumption that to have increased resources to the NHS it would be at the expense of industrial investment.

Given that people will sacrifice some personal expenditure for public expenditure, the ultimate deterrent would appear to be the taxpayer's willingness to fund health care programs. Politically, the growing resistance of taxpayers is likely to have a major impact upon all health care systems. In these circumstances, the relative priority of the "welfare state" over the priorities of personally determined consumption is an extremely complex question. It is in this context that we are beginning to see held up to closer scrutiny the list of activities to be decided and funded by the public sector as opposed to the services which the private sector chooses to fund. As Yellowlees (1978, p. 48) observes:

> It seems evident that beyond a certain point in a nation's development, increased expenditure on health services is not reflected in better mortality rates: - it is difficult to make a case for a higher rate of expenditure on health services compared with other areas of social services spending, or for that matter for more money for health services rather than more income in the pocket of our people.

The irony in this is that just at the time a Socialist Government is having to tailor its most cherished principles of egalitarian provision, the U.S. is moving - albeit very slowly - towards a form of national health insurance system. "Socialized medicine" was always an inappropriate term to apply to the NHS, given its degree of freedom to practitioners to operate inside or outside of the system, but we might expect this debate to be heightened in the future: namely, the choice of private decision rather than public provision. If that happens we might yet see the U.K. and U.S. systems of health care moving more

closely together, from their distinctive theological standpoints, political cultures and history, albeit with rather different benefit packages and ownership schemes in mind.

Indeed, common ground is being established already. Recent attempts to establish a causal correlation between the size of expenditure and the health status of the nation's population have failed in both countries. The general proposition that our respective health services have also failed to deliver what they promised, i.e., a perceptible reduction in ill-health, has influenced the debate about the future of health services and expenditures on them; and the importance of lifestyle and the environment now appear central to this debate.

The aim of the English health service, as expressed in the Health Services Act (1946), was "to secure improvement in the physical and mental health of the population." Although such an aim can be viewed as too restrictive, in another sense it is too all-embracing inasmuch as its achievement involves actions not only by government agencies which range much wider than the Service itself but, crucially, upon the actions of individuals themselves. There has been a great emphasis throughout the last thirty years on the public's rights -but little on the corresponding duties that these rights imply. Further advances in "health" depend, in no small way, upon persuading or cajoling people to alter their lifestyle. In consequence, neither the state nor organized medical services (public or private) can be held solely responsible for an individual's state of health.

To admit, therefore, that one's state of health can only in part be improved by health services, and that it also needs to be tackled by lifestyle, behavioral and environmental changes makes ways of influencing these factors critically important. Indeed, we might live longer - or at least better - if we were encouraged to live healthier lives. Methods of living healthier lives however, are as clearly lacking as is evidence of accomplishment. That really is the challenge to be taken up by the developed nations over the next thirty years. It is just conceivable that projected changes in our economic lifestyles now could create the opportunity to question more closely the role and functions of our health services, and make possible new initiatives, whether public or private, towards changing personal lifestyles.

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Health Care Cost Control Through Incentives and Competition: Consumer-Choice Health Plan *by Alain C. Enthoven**

INTRODUCTION

In 1977, the nation's health care spending exceeded $160 billion — four times the 1965 amount (Gibson and Fisher, 1978). Real per capita spending (i.e., net of general inflation) increased 94 percent from 1965 to 1977. Public sector spending rose seven times over, from $9.5 billion to $68.4 billion (Gibson and Fisher, 1978).[1] Federal Medicare alone is doubling from 1976 to 1980, i.e., up from $18 to $36 billion (Bureau of the Budget, 1979). The Fiscal 1980 Budget projects $52 billion for 1982. Most of this government spending is open ended and not controllable. Health care spending is seriously straining the Federal budget.

There are good and acceptable reasons for much of the increase in health care spending: growth in public and private insurance coverage brought access to many who previously did not have it, especially the aged and the poor; advances in technology increased the power of medicine to prolong life and enhance its quality; the frequency of malpractice claims and the size of settlements have increased. But the increase in spending has far exceeded what could be justified or explained on these grounds, especially in recent years.

The main cause of the unjustified and unnecessary increase in costs is the complex of perverse incentives inherent in today's dominant system of health care financing. Most doctors are paid on a fee-for-service basis which rewards them for providing more and more costly services, whether or not more is necessary or beneficial to the patient. Hospitals are reimbursed for their costs, so they are rewarded with more revenue for generating more costs. Indeed, a hospital administrator who seriously pursued cost cutting (e.g., by instituting tighter controls on surgical procedures and laboratory use and avoiding purchase of costly diagnostic equipment by referring patients to other hospitals) would be punished both by a loss in revenue, and eventually by a loss in physician staff and, therefore, patients.

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[1]The latter figure is for the fiscal year ending September 30; the former for the fiscal year ending June 30. But there was a sevenfold increase on a June to June basis.

Most consumers have health insurance which leaves them with, at most, a weak financial incentive to question the need for or value of services. Today's insurance system gives most patients the right of "free choice of doctor," but because their premiums are likely to be the same whichever provider they choose, there is little or no incentive to seek out a less costly doctor or system of care. Furthermore, benefits for more than two-thirds of the workers in private industry health plans are paid for entirely by employers, so that many workers have little or no knowledge of or concern over how much their health insurance costs (Price, 1978).

Within this financing system, the question of how best to spend a limited amount of money for the health care of a population is never even posed. Providers of health care services (mainly doctors and hospitals) are not required to set priorities, look at alternatives and make hard choices. Such a system must produce inflation in prices and waste in the use of resources.

What we have today can be described as a tax-subsidized and often involuntary membership in an "Expensive Lunch Club." Imagine that you and 19 friends belong to a lunch club. You agree that you will each pay 5 percent of the total lunch bill for the group. Each member is free to choose whatever he wants. Consider the incentives. Suppose you go to lunch one day feeling that a $2 salad would satisfy your needs and be just fine for your health. You sit down and watch your friends order. One orders filet mignon; the next orders lobster. Now it is your turn. You calculate that if you order the $12 filet instead of the $2 salad, it will cost you only 50 cents more. There is little economic incentive to choose the less costly meal. Not only does membership in this club give you little incentive to choose the less costly meal, but also, if everyone in town is a member of this or a similar club, there is not much incentive for anyone to open an economical restaurant that specializes in healthy $2 salads!

The patient's right of "free choice of doctor" in most health insurance plans is similar to the member's free choice of a meal in the "Expensive Lunch Club." As I intend to make clear in what follows, I do not propose that this important right be taken from the patient. What I do propose is to augment this right with another: the right of the patient to agree to get all his care from a limited set of providers in exchange for better benefits or lower premiums. In other words, I propose that each consumer be allowed to opt out of the "Expensive Lunch Club," and sign up with an economical restaurant instead.

ALTERNATIVE FINANCING AND DELIVERY SYSTEMS

The fee-for-service cost-reimbursement system so dominates our health care financing that most people take it for granted. However, there are successful alternatives operating in the United States today; these health care financing and delivery systems are economically rational in that they reward people for finding ways to deliver better care at less cost.

Physicians receive only about 20 percent of the total national health care spending, but they control or influence most of the rest. They are the primary decision-makers in our health care system. Today's dominant financing system imposes very little responsibility on them for the economic consequences of their decisions. They can hospitalize, order tests, and demand the purchase of costly equipment with no reward for economy and no penalty for being wasteful. Their education and professional attitudes combine with their financial incentives, patient expectations, and other factors, to minimize their concern over cost and to foster cost-increasing behavior. The key issue in cost control is how to motivate physicians to use hospital and other health care resources economically.

I believe the most effective and acceptable way to get the costs under control is to establish systems in which physicians are rewarded for finding ways to give better care at less cost. I think it would be possible for them to cut costs substantially without cutting the quality of care (Enthoven, 1978a).

In the alternative systems, there are built-in cost controls and incentives to use resources wisely. The source of funds is not open-ended. Physicians accept responsibility for providing comprehensive health-care services to their enrolled members, usually for a periodic per capita payment. The list of such alternative systems includes prepaid group practices, individual practice associations, health maintenance plans, health care alliances, and variable cost insurance (Enthoven, 1978a).

The largest and best known of the alternative financing and delivery systems are now federally qualified Health Maintenance Organizations (HMOs). And within this category, prepaid group practices have the most members. But the concepts of alternative delivery systems are broader than the legal definition of an HMO. The essential ideas are: first, the consumer agrees to get all his care from or under the control of a limited set of providers, in exchange for what he perceives to be lower costs and/or better benefits, and second, there is some reward to physicians, managers, and/or patients for economy in the use of resources.

There are many variations on these organizational concepts. For example, some innovative insurance carriers are developing plans based on individual primary care physicians who serve as "general managers" of their patients' care and who share in the savings, if the total costs for their patients are kept below premium revenues. Furthermore, there are other innovative possibilities which have not yet been tried.

Many comparison studies provide convincing evidence that prepaid group practice HMOs reduce total per capita costs (premium and out-of-pocket) to levels from 10 to 40 percent below those for comparable people cared for under traditional fee-for-service insurance programs (Luft, 1978). The main way they do this is by

cutting the use of hospitalization some 30 to 50 percent. Other systems might be able to achieve similar savings.

I believe that alternative financing and delivery systems which use resources wisely would largely replace the system of uncontrolled fee-for-service, cost-reimbursement, and third-party intermediaries, if they were given an opportunity to compete on equal terms.

CURRENT ABSENCE OF FAIR ECONOMIC COMPETITION

The main reason that the alternative systems have not become widespread is that they are not allowed to compete on equal terms. Most people have their health insurance 100 percent paid for by government or employer -- and/or they are locked into a single insurance plan based on fee-for-service and cost reimbursement -- so they cannot benefit financially by joining a less costly system. Comparatively few people have a multiple choice on an economically fair basis, that is, in which the government or employer contributes the same amount, whichever plan the beneficiary joins, so that he can save money by joining a less costly system. Just as a town full of "Expensive Lunch Clubs" would have competition only among expensive restaurants, so today's dominant system of health care financing, for the most part, limits competition to costly health services delivery systems.

Medicare

Medicare is based on fee-for-service and cost-reimbursement. Thus, it systematically pays more on behalf of people who choose more costly systems of care. There is a provision for paying Health Maintenance Organizations on a quasi-capitation basis; but it is very complex, discriminatory against HMOs and their members (the government keeps half the "savings"), retains elements of cost reimbursement, and has not been put into operation to any appreciable extent. In 1970, Medicare paid $202 per capita (on a cost-reimbursement basis) on behalf of beneficiaries cared for by cost-effective Group Health Cooperative of Puget Sound, but paid $356, or 76 percent more, on behalf of similar beneficiaries (i.e., an age-sex matched sample) in the same area who chose to get their care from the fee-for-service sector (Goss, 1975). On average, for six group practice prepayment plans around the country included in the study from which these data come, Medicare paid 36 percent more on behalf of similar beneficiaries who chose fee-for-service (Goss, 1978; Corlem and Krute, 1975). And it is in the nature of Medicare cost-reimbursement that this subsidy to fee-for-service will increase as the cost differential widens. Medicare beneficiaries could get their care from less costly providers, but they are not allowed to keep for themselves the savings generated by that choice, either in lower premiums or better benefits. It simply is not fair competition if the government systematically pays more on behalf of one type of competitor.

We could have fair economic competition serving Medicare beneficiaries if Medicare subsidized their purchases of health insurance or membership in an alternative system through a periodic fixed dollar payment, and if people were given a choice from all the available health plans operating in their area meeting federal standards. In other words, we could have a "freedom of choice provision" for Medicare whereby beneficiaries could direct that their Adjusted Average Per Capita Cost (to Medicare) be paid as a premium contribution to the plan of their choice. That would enable efficient organized systems competing to serve Medicare beneficiaries to pass on their savings to the beneficiaries in the form of better benefits--such as catastrophic illness protection—and lower premiums.

Medicaid

From the point of view of those who are eligible, Medicaid pays all the cost of covered benefits. But again, most Medicaid providers are paid on a fee-for-service and cost-reimbursement basis. Medicaid usually has limits on fees for individual services, and may pay hospitals less than the full cost of services provided. But providers can increase their Medicaid revenue by prescribing a greater volume of services for the same medical condition. Thus, Medicaid gives consumers and providers no economic incentives to use resources wisely.

Fair economic competition could serve Medicaid eligibles if they were given a choice of competing health care financing and delivery plans offering comprehensive services, and a voucher, like a "health insurance premium stamp" (analogous to food stamps) to pay all or most of the average cost of a comprehensive plan. In such a system, a government agency would serve as advisor, advocate, and broker for the beneficiaries. Project Health in Multnomah County, Oregon, is a good model for this.

Tax Laws

The Internal Revenue Code excludes employer contributions to health insurance from the employee's taxable pay. This, in effect, subsidizes employee decisions to select more costly health care systems and encourages employee pressure for more employer-paid health benefits. If the employees take an additional dollar of gross compensation in cash, they get to keep roughly 60 to 70 cents after tax; if they take it in health benefits, they get the full dollar. Employers and unions are motivated to exhaust this opportunity for tax-sheltered pay. This is becoming even more important as inflation and increasing Social Security taxes are pushing employees into higher tax brackets.

As insured benefits become more comprehensive, and as the relative efficiency of the alternative delivery system over the uncontrolled fee-for-service sector improves, the premium for the fee-for-service plan will gradually surpass and exceed by an increasing margin that of the alternative. In some cases, the employer or health

and welfare fund maintains the level of its premium contribution on behalf of either health care delivery system but lets the alternative system offer better benefits than the fee-for-service plan. This allows the alternative system to pass the benefits of its superior efficiency on to its consumers. After a point, however, the marginal value of extra benefits to each consumer will be less than the marginal value of the cash equal to the cost of those benefits. Then, from the point of view of the HMO or other alternative system, extra benefits become less valuable as a way of attracting new members than would be premium reductions passed on to consumers.

In other cases, the employer or health and welfare fund keeps the benefits roughly equivalent and pays a large premium to the more costly fee-for-service plan. Here, the employer pays a subsidy of an increasing relative amount on behalf of those who select the more costly delivery system. When the employer pays 100 percent of equivalent comprehensive benefits either in the fee-for-service sector or to the HMO, the employee is deprived of an important financial incentive to choose a less costly health plan. The autoworker in California who chooses membership in a prepaid group practice plan that provides comprehensive benefits for $77 per month, rather than the Blue Cross plan that costs $101, does not get any part of this savings because, under its contract with the union, General Motors must pay the whole cost either way and does not return any portion of the $24 difference to the employee.[2] In the auto industry, and in many industries in California, this situation is becoming the rule rather than the exception. Thus, some collective bargaining agreements force the employer to subsidize the employee's choice of a more costly health plan. Apparently, the HMO Act is not effective in requiring the employer contributions on behalf of different plans to be equal.[3] And the Internal Revenue Code, in effect, allows more tax-free compensation on behalf of the worker who chooses the more costly plan. Thus, it should not be surprising that HMOs have grown slowly when one considers that such powers as the United States Government and many

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[2]These are approximate 1977-1978 Northern California composite premiums (i.e., averages of individuals, couples, and families).

[3]The regulations implementing the HMO Act do require that the health maintenance organization alternative shall be included in employees' health benefits plans on terms no less favorable, in regard to an employer's monetary contribution, than those on which the other alternatives in the health benefits plans are included. (See Sec. 110.807 Code of Federal Regulations, Federal Register, Vol. 43, No. 80, April 25, 1978, p. 17686.) Apparently, this equality of contribution would have to be enforced by the HMO as it sells itself in the marketplace HMOs are understandably reluctant to so antagonize their employer customers. Also, a lower employer cost for HMO members can be an incentive for the employer to encourage employees to join the HMO.

large employers pay substantial subsidies to the fee-for-service sector on behalf of people who choose not to join HMOs.

I believe that companies and unions should find it in their enlightened long-run self-interest to agree on an employer contribution large enough to pay all or most of the premium of a good-quality cost-effective comprehensive health plan and then leave it to the worker who wants the more costly fee-for-service free-choice-of-doctor plan to pay the difference himself. Since the employee--not the employer or union--chooses the provider, it seems reasonable to let him bear the costs or realize the savings associated with his choice. That way, labor and management could cease to subsidize the most costly providers of care, and they would take a large step toward creating fair economic competition.

Whether or not they can agree on this, it makes little sense for the IRS to participate in the subsidy to the more costly health plans. It would make more sense to treat, above a certain level, the employer contribution as taxable income. It would be better still to replace the exclusion of employer contributions from taxable income with a refundable tax credit that is not greater if the family chooses a more costly health plan. As well as correcting the cost-increasing incentive inherent in today's tax laws, the use of a refundable tax credit would also channel more medical purchasing power to lower income groups.

Another important effect of the tax law is, in essence, to limit the employee's health insurance options to the plan or plans offered by the employer or labor-management health and welfare fund. Employers have seen health benefits as a way of attracting qualified employees to their company, or as a way of discouraging unionization. Union leaders have seen health benefits as a prize to be won at the bargaining table, and as a way of making the union the worker's benefactor. Both emphasize benefits specific to the employer or union; this medical purchasing power is not used to create a market of competing provider groups in the community. The tax law should be changed so that employer contributions are usable toward any qualified health plan.

While marketing to employee groups instead of individuals certainly aids the spread of health insurance, the link between jobs and health insurance adds greatly to the time and cost required to market a new health plan. The health plan must first sell the employer and/or union and negotiate a package to meet their specific requirements, and then sell the plan to the employees. New alternative delivery systems such as individual practice associations would have a far easier time getting started if they were merely required to satisfy the criteria of one regulatory agency, and if they were then allowed to participate in a government-run open enrollment in which membership was made available to all persons in their market area.

The Health Maintenance Organization Act

The Health Maintenance Organization Act of 1973 requires employers to offer their employees the option of joining one group practice HMO and one individual practice HMO, if such federally qualified organizations are operating in their area. This was a small step in the right direction. But, it is very far from creating an effective competitive system. It leaves the health plan market segmented. For example, some employers might offer one HMO in addition to their conventional insurance plan while others offer a different one, so that the HMOs might rarely or never meet each other in direct competition. Each can become, say, 25 to 30 percent more efficient than its uncontrolled fee-for-service competitor and then settle into an equilibrium in which its costs rise at the same relative rate as the fee-for-service sector.[4] Competition among HMOs, as well as against fee-for-service plans, is needed to give them an incentive to keep improving efficiency.

STRATEGIC POLICY CHOICES FOR COST CONTROL: COMPETITION OR REGULATION

The main direction of public policy in the 1970's has been to protect the dominant system of fee-for-service, cost-reimbursement and third-party intermediaries from fair competition, and then to try to limit its cost-increasing effects by government regulation in the form of direct controls over prices and capacity. I think that there are many reasons for believing that a system of competition among different types of health plans, relying on incentives and a decentralized market to control costs, would be far more effective and acceptable to the American people. These reasons are enumerated below.

1. Experience in health care and other industries shows that government controls on prices and capacity are likely to raise costs and retard beneficial innovation (Noll, 1975). In the long run, price regulation amounts to cost reimbursement, and it gives producers the same incentives. An across-the-board percentage limit on hospital revenue increases, as proposed by the Carter Administration, rewards the fat and punishes the lean.

2. Certificate-of-need regulation by states, in which a regulatory authority must issue a permit before an increase in hospital capacity can take place, has failed to control overbedding. For example, Lewin and Associates (1975) found that thirty of forty-one

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[4] "Competition of Alternative Health Care Delivery Systems," in Competition in the Health Care Sector: Past, Present and Future. Proceedings of a conference of the U.S. Federal Trade Commission, June, 1977, Warren Greenberg, ed.; Washington D.C.: U.S. Government Printing Office, March, 1978; Research Paper No. 378, Graduate School of Business, Stanford University, June, 1977.

states and areas which had such controls (and for which complete data could be obtained) approved hospital beds in excess of 105 percent of their published need projection for five years hence. Fourteen of these began the period overbedded and approved additional beds, while five others became overbedded during the period studied as a result of the projects they approved. Salkever and Bice (1976) and Hellinger (1976) found similar results using multiple regression analysis. In addition, the leading experts cannot agree on standards for the appropriate number of beds (Enthoven and Noll, 1977).

3. Where tried, competition has been an effective contributor to cost control. The best example is Hawaii where most people belong either to the Hawaii Medical Service Association or to the Kaiser-Permanente Medical Care Program. While other factors, such as the character of employer involvement, contribute to cost control there, and competition remains attenuated by various government programs, the two plans do compete vigorously. Their premiums for comprehensive care are among the lowest in the country, despite the fact that consumer prices generally are higher in Hawaii than in most areas (Christianson, 1978). Another very promising area of health plan competition is Minneapolis-St. Paul (Faltermayer, 1978).

4. Medical care has many characteristics which make it particularly unsuitable for successful economic regulation. Because of the subtle, elusive, almost indefinable nature of the product, the government cannot measure output or evaluate its quality (except in cases of extreme abuse). The "doctor office visit" and the "patient bed-day" are not standard units whose price can be regulated like passenger miles or kilowatt-hours.

5. Government (including regulators) responds to well-focused producer interests; competitive markets respond to consumer interests. People specialize in production, diversify in consumption. They are therefore much more likely to pressure their representatives in government and their producer interests.

6. People accept efficiency-improving changes (e.g., closing unneeded plants or hospitals) produced by impersonal market forces in the private sector. But, when such changes are imposed by government, those who would be harmed resist them, usually successfully, through legal and political action. (Consider the extreme difficulty of closing post offices and defense installations.) This makes for great rigidity in regulated industries. It is virtually impossible to close many unneeded hospitals by regulatory action (Schultze, 1977).

7. Even if regulation were successful at controlling total health care spending at the desired growth rate, there would still be no force in the regulatory system to motivate efficiency in the production or allocation of services. At best, the controls would freeze the health services industry in its present wasteful patterns.

8. The decentralized competitive market leaves maximum freedom to individual providers and consumers. It encourages the pluralism and diversity that is valued by the American people. The regulatory approach works on the basis of uniform numerical standards. It does not tolerate diversity.

9. The Carter Administration's failure in 1978 even to get its proposed Hospital Cost Containment Act through the House Health and Environment Subcommittee illustrates the fact that there is little political support for more direct federal controls.

CONSUMER CHOICE HEALTH PLAN: A SYSTEM OF UNIVERSAL COVERAGE AND COMPETITION

For these reasons, in the fall of 1977, I proposed a system of universal health insurance and fair market competition among health care financing and delivery plans called Consumer Choice Health Plan (CCHP) (Enthoven, 1978). In simplest terms, the main ideas are as follows:

1. Once a year, each consumer (i.e., individual or family) would be offered the opportunity to enroll for the coming year in any one of the qualified health plans operating in his area. While traditional insurance plans offering "free choice of doctor" on a fee-for-service basis would still exist, I believe that competition would encourage and, in fact, compel, the development of "limited provider plans," the alternative systems with built-in cost controls discussed earlier. In such plans, the consumer would agree to get his care from or on referral by physicians participating in that plan, and each health plan would have agreements with participating providers covering costs and delivery of services. (The plan might allow "out of plan" use on financial terms less favorable to the beneficiary, e.g., 20 percent coinsurance instead of 100 percent covered, and it would have to cover emergency services for members temporarily outside the plan's service area.)

2. Whatever financial assistance each individual or family gets toward the purchase of its health insurance — from Medicare, Medicaid, employer, or tax laws — would have to be the same whichever qualified health plan the individual or family chooses. Today, as described earlier, these financing sources usually pay more on behalf of people who choose more costly health plans. However, as also described earlier, this could be corrected by a system of premium subsidies for Medicare and Medicaid beneficiaries and refundable tax credits for the rest of the population. Thus, under Consumer Choice Health Plan, if a family chose a more costly health plan, it would pay the extra cost itself out of its own net after-tax income. (Existing employer-employee agreements concerning employer contributions to health benefits plans need not be disturbed except by the requirement that the employer contribution be the same whichever health plan is selected.)

3. A uniform set of rules would apply to all health plans. For example, each would have to accept all comers, up to its capacity, without regard to age, job status, prior medical conditions, etc. (The system would include means for compensating health plans for serving a less favorable than average mix of medical risks.) Every health plan would have to follow rules with respect to non-discriminatory pricing (called community rating), comprehensive benefits (as defined by the national health insurance law), and full protection against the cost of catastrophic illness (i.e., a limit such as $1000 on each family's annual out-of-pocket cost for covered benefits). ("Comprehensive benefits" is used here to mean "all in-patient and out-patient physician and hospital services necessary to treat disease or injury." The list of covered benefits might limit or exclude, for example, cosmetic, dental, outpatient psychiatric, infertility, and experimental services, eyeglasses, out-patient drugs, etc.) The point of such rules would be to assure that the health plans are competing to provide good quality comprehensive care at a reasonable cost -- the social goals of the program -- and not profiting by such practices as selection of preferred risks or catering to the willingness of some people to take chances with inadequate coverage because they believe that in the event of serious illness government would take care of them anyway.

4. For simplicity, each health plan would offer one or two standard plans for the whole community rather than a different, specially negotiated plan for each employee group.

Consumers who join health plans that do a good job of controlling costs would pay lower premiums or receive better benefits. Health plans that do a poor job of controlling costs would lose customers and risk being driven out of business. Thus, in the long run, the surviving health plans under CCHP would be the ones that offer a good value to their customers.

Consumer Choice Health Plan would create a system of fair market competition in which providers and consumers could benefit by joining health plans that use resources wisely. Under CCHP, the health care financing and delivery system would be transformed, gradually and voluntarily, from today's system with built-in cost increasing incentives to a system with built-in incentives for cost control and consumer satisfaction.

CCHP should be considered, in the first instance, as a strategy for achieving universal health insurance and cost control. There are considered reasons for the choice of each of its specific details. But there are other, sometimes equivalent, ways of achieving the plan's purposes. CCHP can be viewed as a detailed plan for implementing the recommendations of the National Commission on the Cost of Medical Care. It is not an "all or none" proposal. Effective market forces could be introduced, for example, without substantially increasing federal outlays for health care services. Some parts could be adopted without others; it could be phased-in in different ways.

However, I doubt that it would have its desired impact unless most Americans have economic incentives to choose cost-effective health plans.

WOULD THE TRANSFORMATION OF THE FINANCING AND DELIVERY SYSTEM TAKE PLACE FAST ENOUGH?

A frequent objection to reliance on incentives and competition is that "it won't work fast enough": we must enact direct controls on prices and capacity now because we cannot wait for incentives and competition to get costs under control. This argument rests on the false premise that price and capacity controls work quickly.

In May of 1978, Federal Trade Commission Chairman Michael Pertschuk wrote a letter to the White House that compared the market approach with the regulatory approach:

> Although regulation might appear to be capable of achieving faster results, it would be unlikely to have much impact before it is fully in place and any unforeseen imperfections worked out. It is risky to assume that the apparent definiteness of a regulatory scheme--which looks very good on paper--is a better guarantee of swift results than a properly functioning market. All our national experience with such programs, in fact, teaches that implementation of a regulatory program takes a long time and never fully achieves the promise which is so eloquently laid out on paper. It would be best, therefore, for decision-making on a National Health Program to view with healthy skepticism the promise of quick results implicit in regulatory approaches (Pertschuk, 1978).

The plain fact, brought out by several studies, is that after years of trial, planning controls on health care capacity have failed (See Lewin and Assoc., 1975; Hellinger, 1976; and Salkever and Bice, 1976).

On the other hand, I believe that the development of alternative delivery systems and the resultant control of costs would take place far more quickly than most people suppose, if only government, management, and labor would create a system of fair market competition. For one thing, such alternative systems have already been sponsored by physician groups, industrial companies, unions, universities, consumer cooperatives, Blue Cross and Blue Shield, insurance companies, and local government agencies. Hospitals would be logical sponsors. So I believe that there would be no shortage of sponsors if the economic climate were one in which efficient plans could attract enrolled members by passing on to consumers the benefits of their superior efficiency. The savings already demonstrated by the most efficient prepaid group practices show that the potential margin of economic advantage is large.

Some people estimate the potential speed of delivery system reform in terms of the growth of existing HMOs that now care for about 6 million people. We would have to wait a very long time indeed if we depended on a 10 percent annual growth rate of existing HMOs. But some systems such as Individual Practice Associations and Health Maintenance Plans could start up quickly without large front-end investments or new facilities. Insurance companies could follow the lead of the SAFECO Life Insurance Company of Seattle and create plans in which participating individual doctors are rewarded for economical use of resources. Moreover, existing institutions such as multispecialty group practices could convert to new financing arrangements rather quickly if they saw it in their interest to do so.

PHYSICIANS SHOULD PREFER COMPETITION TO REGULATION

There are many reasons why physicians should prefer the strategy of fair market competition to direct government controls on prices and capacity. First, such a strategy would be based on cost control through individual judgment by doctors and patients, with consideration of individual needs, tastes, and circumstances, rather than on arbitrary numerical standards applied equally across the board. The decentralized competitive market is compatible with diversity, while the regulation approach works on the basis of uniformity. Second, a successful competitive market would safeguard physician autonomy. If physicians accept the per capita spending determined by the competitive market and provide good quality care for it, there will be little need or basis for further government intervention. The regulatory approach invites detailed second-guessing by regulators. Third, continuing cost escalation in the face of ineffective regulation puts pressure on political leaders to attack doctors as a way of creating political support for more stringent controls. We have already seen hearings on "unnecessary surgery," reports of doctors earning more than $100,000 per year from Medicare, a government report implying that doctors earn too much, and a recent speech by President Carter in which he implied that physician associations were more interested in the welfare of doctors than patients. Medical cost inflation is putting a great deal of financial pressure on the government. One must expect its leaders to fight back. And physicians are vulnerable; their incomes look very large to most people. And more stringent controls are likely to be more burdensome, complex, and unpalatable. Fourth, perhaps most fundamentally, the competitive market economy rewards people for high-quality cost-effective performance. In contrast, political control is a leveling influence.

However, "fair market competition" is not a code word for the status quo. It means honest economic competition by the rules accepted by American business in general. It means no boycotts to enforce such self-serving economic principles as that every health insurer must offer "free choice of doctor." (American Medical News, 1977) It means no denial of hospital privileges for economic reasons such as to keep out an HMO. And it means no monopolistic practices

such as signing up all the doctors in the country in an Independent Practice Association (IPA) and using the IPA to fix fees. Competition would have to be real and effective to solve the problem of cost.

HOSPITAL ADMINISTRATORS SHOULD PREFER COMPETITION TO REGULATION

Today's system pays hospitals more if their costs are higher. The government tries to limit the damage this incentive causes by imposing direct controls on prices and capacity, complex disallowances, and increasingly burdensome and frustrating paperwork. Hospital administrators have little choice but to devote increasing time and effort to protecting their institutions from the regulations. I believe that most hospital administrators chose their profession because they saw in it an opportunity to participate in the rendering of a valuable humanitarian service. They do not like being depicted as public enemies. But now the Secretary of Health, Education, and Welfare refers to hospitals as "obese," and there are increasing complaints about hospitals as a special interest group defeating the public's need for cost control. The root of the problem is that society is paying hospitals to do one thing (i.e., deliver increasingly costly care), but it wants them to do something different (i.e., find ways of delivering better care at less cost).

In a system of competing cost-effective health plans, such as would be brought into being by CCHP, hospital administrators would find themselves negotiating with cost- and quality-conscious medical groups. Health plans would find it in their interest to negotiate contracts with hospitals that would reward hospitals for finding ways of delivering better care at less cost. Society would be paying hospital administrators to do what it wants them to do. I am sure their professional satisfaction would be higher in such a system.

RECOMMENDATIONS

If providers take the position that uncontrolled fee-for-service is the only right and proper way to pay the doctor and cost reimbursement is the only right and proper way to pay the hospital--an obvious economically self-serving position--they will leave the government with no alternative but to regulate physician fees and hospital budgets, with all of the leveling, politicization, detailed second guessing, and bureaucratic burden this would entail. One need only to look at Medicare, Medicaid, and the Canadian National Health Insurance system for models of where this leads. The case for a pluralistic, decentralized competitive market rests on the assumption that physicians and managers can create alternative delivery systems which provide high quality care with built-in cost controls and incentives to use resources wisely.

If physicians and hospitals support the philosophy of fair economic competition and encourage the development of alternative fi-

nancing and delivery systems, they can insure that the principles of self-regulation and diversity of financing mechanisms are the basis of any national health care financing policy. Alternative delivery systems are still too few in number to be able to stand on their own as a political force without outside help. They are still perceived by many influential people in Washington, D.C., as on the fringe and not part of the mainstream.

In the best interests of their patients and society, and in their own long-run enlightened best interest, providers of health care services should:

1. Endorse the principle of fair market competition among alternative health care financing and delivery systems;
2. Participate actively in the creation and development of such systems;
3. Work with labor and management to assure that all employees are offered a multiple choice of comprehensive health plans on an economically fair basis; and
4. Support legislation to make that choice effective for all Americans.

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Private Cost Containment—Medical Practice Under Competition *by Clark C. Havighurst**

INTRODUCTION

The only truly responsible position for the medical profession to take in its defense against increasing government encroachment is in support of a competitive market in which the level of health care spending and of doctors' incomes is determined by smoothly working market forces ultimately reflecting the preferences of consumers as well as those of providers. This article explores the nature of privately initiated cost containment as it could be expected to emerge in such a competitive market, with a view to persuading the medical profession and individual physicians to accept and participate in the developments needed to make private solutions feasible as an alternative to government controls. A critical point is that the private solutions looked for here do not include those, such as the so-called "Voluntary Effort," that are sponsored by organized medicine. Such seeming reforms are merely concessions to pressures that the profession is beginning to feel, and they are subject to challenge by the antitrust enforcement agencies on the ground that they preclude competition and perpetuate rather than break down the medical profession's domination of the avenues of change (See Havighurst, 1978).[1] In my view, physicians should foresake collective economic action in defense of particular modes of medical practice and, instead, pursue collective political action on behalf of the competitive market as the ultimate arbiter of how much we should spend on health care and how it should be allocated. The recent report of the AMA-sponsored National Commission on the Cost of Medical Care provides a solid basis for moving in this direction (See National Commission on the Cost of Medical Care, 1978).

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[1]Impending actions by the staff of the Federal Trade Commission (FTC) can be expected to raise issues concerning professionally sponsored reforms that potentially affect physicians fees even though their immediate effect may be to lower them.

The possibility of some kind of "market" solution to the problem of health care costs has been floating around for some time now, and it may be significant that, far from being washed away in the flood of regulation, it keeps bobbing to the surface. Nevertheless, as Chairman Charles L. Schultze of the President's Council of Economic Advisers demonstrates in an illuminating recent book (Schultze, 1977), government is heavily biased in favor of regulatory answers to policy problems and systematically neglects market-oriented solutions even when they would be substantially more efficient. Thus, despite occasional indications in Washington that market approaches will receive a hearing before an irreversible health policy is chosen, we must expect that, whatever its merits, the market alternative, with its primary reliance on private decision-making, will ultimately be rejected unless it develops a stronger political constituency than it now has. At the moment, this strategy has almost no interest-group support, enjoying the approval only of people who find it ideologically attractive or who are impressed by the magnitude of the cost problem and pragmatically discouraged by regulation. It seems to me that many elements of the medical profession could safely embrace the market approach as the only effective and responsible means of saving the health care system from government-sponsored homogenization, inefficiency, and bureaucratic strangulation.

In illuminating private cost containment for a sophisticated medical audience, it seems desirable to start with an abstract analysis, conceptualizing both the cost-containment problem faced by, and the solutions available to, consumers and providers seeking mutually agreeable arrangements for the financing and provision of appropriate health services. To pursue the usual course of identifying and applauding particular real-world developments in cost containment (e.g., health maintenance organizations (HMOs) and second opinions) would be to plunge immediately into controversy, encountering antagonisms rooted either in immediate self-interest or in particular practices that are irrelevant to the essential issue. Moreover, real-world developments are not necessarily a reliable basis for extrapolating a market-determined future. These developments are only a sampling of a wider range of possibilities, some of which might prove superior to the mechanisms currently being employed. The essence of the market strategy in health care is, after all, that evolution and adaptation in response to the revealed preferences of both consumers and providers should determine ultimate outcomes. For these reasons, much of the discussion here is speculative--designed not so much to prove what would actually happen in a relatively free market as to suggest the nature, range, and richness of the possibilities.

Another reason why a discussion of private cost containment must be partly speculative is that government has systematically neglected this set of possibilities. Despite all the debate over policy issues and the vast amount of resources invested in developing, implementing, and evaluating regulatory schemes, comparatively little public effort has gone into exploring what might happen under the

market alternative. Confirming Chairman Schultze's observations, government has shown little interest in studying how the competitive private sector might be put to work on the health care industry's problems and how government's role might be reduced. Among the policy measures that have been neglected are actions that would remove or reduce government-created distortions in private incentives; foster private innovation and useful forms of competition; repeal or adjust various legal constraints on competition and free choice by both consumer and provider; improve the flow of information to consumers; and recast government financing and regulatory programs to build on the market's strengths rather than undercutting them. Given the emphasis consistently placed in policy analysis on more rather than less public entanglement as the solution to the apparent market malfunction, it is all the more striking that advocates of market solutions--mostly working outside government, though the Federal Trade Commission's advocacy is becoming an important force--have been able to keep the idea afloat.

THE RELATIVE ROLES OF HEALTH INSURANCE AND HMOs IN A MARKET-ORIENTED SYSTEM

One feature of my analysis that distinguishes it from common conceptions of the market strategy is the greater role that I anticipate for private health insurance and the comparatively less central role that I visualize for the prepaid-group-practice variety of HMO. Market advocates have often appeared to rely upon group-practice HMOs as the primary vehicle with which to import competition and increased cost-consciousness into health services delivery. (See Havighurst, 1970 and 1974; Enthoven, 1978; and McClure, 1978.) Because of the emphasis that such HMOs have received, including their intended promotion under the federal HMO Act of 1973, there is now a common tendency to equate the market strategy with their development. But the federal law's encouragement of one set of desirable initiatives has had the effect of discouraging others that might serve the public as well or better. While HMO growth is now taking off again after several setbacks, the great majority of citizens still lack access to even one competitive alternative to traditional health insurance coverage. In this setting, it becomes important that a truly competitive market would have considerably more to offer than federally qualified HMOs.

The main reason why prepaid-group-practice HMOs emerged both earlier and later as the piece de resistance in the market strategy is that they are the one innovation that succeeded in actually getting established in a few places. Thus, they had a tangibility that other possibilities have lacked, and they could be studied and shown to be both safe and effective. In addition, there was considerable evidence that growth of such HMOs had been artificially retarded by law and professional opposition. Their limited development, far from raising doubts about their viability, became a justification for their vindication and promotion. After a decade of inclusion on the nation's health

policy agenda, HMOs now have an identity and a track record that make them, unavoidably, the centerpiece in the market advocates' scenario

Despite these factors making prepaid group practices a logical rallying point for market advocates, such HMOs are not necessarily the final answer to the health care sector's problems and they should be viewed as only one of a wide variety of alternatives that need to be tested in the competitive marketplace. While offering many important improvements over traditional mechanisms, they may sacrifice such strengths as the productivity, commitment, and personal attention that characterize traditional medicine at its best. In addition, prepaid groups are difficult to start and cannot quickly become a powerful competitive influence. Moreover, many areas may be unable to support enough of them to make competition meaningful. Furthermore, the same tangibility that attracted market advocates has also made such HMOs a natural target for government interventionists, who prefer to specify outcomes through regulatory requirements rather than rely on decisions made in the marketplace.

Hence, there are good reasons for looking beyond HMOs, as we know them, in assessing the market's competitive possibilities. In particular, one must ask whether and how traditional insurance and service-benefit plans might evolve so as to become part of a valid solution to the cost problem, rather than remaining a driving force for cost escalation and misallocation of scarce resources. As this article attempts to show, there are many promising opportunities for experimentation and change lying on the broad and largely unexplored spectrum between traditional financing mechanisms on the one hand and federally subsidized group-practice HMOs on the other.

IDENTIFYING THE TRUE CAUSES OF THE MARKET'S PAST FAILURES

The term "market" is a short-hand expression for the institution of private contract and for the multiplicity of voluntary transactions that might be entered into by consumers and producers whose opportunities to gratify their respective preferences are maximized by competition. Whether private contracts can yield consensual resolutions of the health care cost problem depends on many factors. These include the peculiar nature of the insurance contract itself, the incentives of buyers and sellers of insurance, and the competitive conditions prevailing in the market.

It is widely believed that the market has already been shown to be unworkable in health care (e.g., Department of Health, Education, and Welfare, 1979). Almost all major reform proposals in health care have proceeded on the assumption that third-party financing represents a colossal market failure that must be dealt with by extraordinary governmental means. The assumption has been that health insurance, though necessary to protect people against unbearable costs, is so destructive of cost consciousness that it necessitates

public regulation. The HMO strategy is seen as overcoming this fundamental flaw in private insurance by employing a two-party arrangement or capitation payments to internalize costs that are deemed inevitably externalized--that is, shifted to others and therefore hidden—in third-party schemes. The private insurance industry, itself, disclaims any significant ability to do more than it is currently doing about health care costs. Almost everyone seems to agree that health insurance is itself the market failure that must be cured.

These assumptions about insurance need to be carefully examined, however, because private insurers in other fields have taken numerous actions specifically to curb the natural propensity of consumers to spend the insurer's money on benefits not worth their cost. This propensity, which is associated with insurance of all kinds, has earned, from economists, the name "moral hazard." In nonmedical fields, insurers recognize this moral hazard as a problem that they must combat if they are to compete effectively in the marketplace on the basis of price as well as service. Insurance adjusters, multiple estimates, fixed cash benefits, and other mechanisms have been aggressively employed, and it is appropriate to ask why similar mechanisms are so hard to find in health insurance. One common answer is that health care is "different." But that is only to say that there are special considerations in health care that, while they do not change the basic problem, may make it harder to solve, perhaps calling for a different set of mechanisms and approaches. The fact remains that the ingenuity needed to deal with this complexity has been lacking in health insurance to such an extent that we cannot presume that we are seeing an expression of true consumer preferences. Before one can argue, with any conviction, that the market is working, it must appear that private incentives are in good working order and that private actors have not been interfered with in their efforts to deliver to consumers the optimal amount of insurance protection with as little distortion as possible in the demand for medical services. Although these conditions have not been satisfied in the health insurance marketplace in the past, some things are changing so that market forces are likely to become an increasingly reliable guide in the pursuit of cost containment.

The market failure that should concern us is not insurance but overinsurance, which greatly widens the scope of the distortion in the demand for medical care that insurance introduces. While many persons still lack adequate financial protection, the health insurance coverage of the majority is excessive in several respects, not only in providing overly comprehensive benefits but also in featuring administrative approaches and claims policies which indulge rather than counteract the moral hazard. To characterize as overinsurance the coverage that people have freely bought is not to question their rationality. On the contrary, people's choices appear to have been entirely rational, given their incentives and the options available to them. The fault lies instead in particular distortions that have been artificially introduced into the market and that, if removed, would

make it possible for rational consumer behavior to yield a more nearly optimal result in terms of health care spending.

Overinsurance against health care costs is traceable primarily to the tax laws' treatment of health insurance as a nontaxable fringe benefit for both income tax and Social Security tax purposes. The result of this seemingly innocuous tax loophole is to encourage every wage-earning family to pay as many of its medical bills as possible through employer-purchased insurance so that they can be paid with dollars that have not been subjected to previous taxation; comprehensive insurance, covering many easily budgetable expenses, is the result. Similarly, if a saving in employer-paid health insurance premiums is achieved and passed on to employees as increased wages, it becomes taxable income and must be shared with the government; this consequence significantly dilutes the private sector's incentive to seek cost containment. If taxes were not a factor in private decisions to insure, those decisions would require facing fully the trade-off between financial protection and exposure to the moral hazard. For the most part, private choices could be trusted not to introduce more distortion into the demand for medical care than is warranted by people's perceived need for protection against unmanageable health care costs. Thus, it appears that the tax law, by piling one distortion on top of another, is a major source of the health care industry's problems. Professor Martin Feldstein and Bernard Friedman call it a "subsidy of a subsidy" (Feldstein and Friedman, 1974).

Without the perversities introduced by tax incentives, health insurance would look very different than it does today. Comprehensiveness in benefits would not be the ideal it has become because consumers would have reason to limit their payments into a premium fund on which others could draw. Heavier coinsurance, larger deductibles, and exclusion of both highly discretionary items and minor budgetable items such as prescription drugs and dental care would be standard. Insurer efforts to police spending would be more common than they are today and generally approved as a service to insureds.

Changing the tax laws would have other advantages in addition to strengthening the basis for relying on private incentives in the medical care sector. For example, a shift to tax credits (including refundable credits or health insurance vouchers for those with little tax liability) would encourage persons in all income classes to insure themselves, thus helping to solve the problem of underinsurance of lower-income persons. Subsidizing health insurance purchases through the use of tax credits, rather than through an exclusion from income or a deduction, would also improve tax equity by making the amount of subsidy not depend on the recipient's tax bracket. The most important goal must be to eliminate the incentive to overinsure by placing a fixed upper limit on the amount of subsidy for any individual, so that beyond that amount, the individual would be spending his own after-tax dollars for additional health coverage. Professor Enthoven has forcefully argued for revising the tax laws to restore to consumers

the opportunity to benefit themselves by economizing in the purchase of health insurance (Enthoven, 1978).

Despite the powerful logic supporting a change in the tax law, such a change is not being actively considered. When government has created a problem by intervening in the private sector, as it has here, it usually seeks to solve that problem by more extensive intervention rather than by putting private incentives back in order. This "tar-baby" effect, another manifestation of the regulatory bias that Chairman Schultze deplores, is hard to overcome politically; but, in assessing regulatory moves, it is relevant that a valid "deregulation" strategy is available.

Unlike the tax law, which is not likely to be changed soon, other factors inducing weakness in the private sector's cost-containment efforts are not immutable, and indeed appear already to be in the process of significant change. The core of the problem is the questionable competitiveness of the heavily regulated, antitrust-exempt insurance industry. Weak competition is not inevitable in this industry, however, given the large number of firms and the ease of entering new markets. Moreover, competition would probably have been an effective stimulus of insurer innovation in the past had it not been for the strong resistance from organized medicine that individual insurers faced whenever they attempted to take aggressive cost-containment measures in the interest of their insureds (See Havighurst, 1978 and Goldberg and Greenberg, 1977). But, because the antitrust laws clearly prohibit most of the concerted professional activities that have inhibited third-party innovations in the past (Havighurst, 1978), the new interest in applying the antitrust laws to the medical profession should significantly improve the climate for innovation in cost containment. At the same time, the increasing cost-consciousness of major insurance purchasers is creating pressure to get insurers more involved in cost containment, and there is now some basis for hope that insurers' mutual forebearance from competition in that difficult area will soon break down unleashing competitive innovation and potentially rapid change. The medical profession should recognize that, if governmental domination of the system is to be avoided, the private sector must have greater freedom to work on the cost problem.

POSSIBLE INSURER STRATEGIES

Before private insurers are embraced as appropriate vehicles of cost containment, it is necessary to consider precisely how the insurance contract might accommodate emerging concerns about costs without overstepping the limits of the insurer's appropriate role. Private-sector cost containment is, in large measure, an administrative problem that must be addressed in a competitive environment featuring the important constraint that a sufficient number of individual providers and consumers must be satisfied with respect to a plan's various elements. These elements include not only the price charged

or paid but also fairness and freedom from undue administrative hassle. Numerous conflicting interests and trade-offs must be addressed, and the plans that are most successful in accommodating these conflicts will be most successful in the marketplace. It is impossible to make a priori judgments about the administrative arrangements needed to make various approaches work. Indeed, it is in that area that the greatest challenges and the greatest element of unpredictability arise. Though some of my speculations suggest administrative complexities, it must be remembered that plans which are too cumbersome will not, and should not, survive in a competitive market.

Insurer cost containment must not take the form of controlling medical practice. Instead, in accordance with traditional insurance concepts, cost containment should be confined to defining the limits of insurance coverage. Exclusions from coverage that are strategically imposed for cost-containment purposes could affect any of several of the insurance policy's dimensions. Monetary exclusions, including deductibles, copayment requirements, and limits on the amounts payable in particular circumstances, are one set of possibilities. Another possible approach is the exclusion of particular treatments or procedures or their inclusion only if certain preconditions are met. Still another cost-containment strategy would be the exclusion from coverage (or inclusion on less advantageous terms) of services rendered by providers who refuse to accept the insurer's administrative requirements or fee schedule or who are simply not known to be efficient or cooperative. Insurance purchasers, comparing premiums with the coverage given, might rationally choose policies with any of these types of selective coverage, thereby accepting, in return for a lower premium, some financial risk or some restriction on their free choice of provider. These various departures from traditional indemnity and service-benefit policies, which offer unrestricted choice of physician and hospital and largely accept providers' decisions on what costs to incur and what charges to make, suggest the conceptual basis for innovations that competing insurers can be expected to adopt.

It is important to recognize that a coverage limitation in a privately negotiated insurance policy is only a coverage limitation, nothing more. It implies nothing whatsoever about the appropriateness or inappropriateness, in particular cases, of the excluded treatments or procedures or about the competence or efficiency of the providers whose services are not covered. All that is involved is a voluntary contractual limitation on the right of the insureds to draw on the common fund so that, if the plan does not cover a particular treatment or procedure or day in the hospital, the patient bears its cost. Because we are not dealing, for the moment, with patients who are indigent, it can be assumed that the patient can usually pay for any additional care that he and his physician agree is desirable even though the plan excludes it from coverage. Therefore, any service exclusions that plans might adopt should not become embroiled in a debate over what is or is not good medical care or over the medical "need" for the

excluded service in particular circumstances. Likewise, exclusion of individual providers' services from a plan's coverage cannot be legitimately called into question so long as the market is competitive and therefore offers providers alternative opportunities. Competing plans must ordinarily be presumed to supply what consumers want.

Any contractual limitation on insurance coverage must obviously be designed to protect the insureds who would benefit by a lower premium, and not just the insurer. That it is often in consumers' interest to accept restrictions on their freedom of choice is obvious from their voluntary enrollment in group-practice HMOs. Moreover, significant numbers of HMO subscribers go outside of their plan to purchase services that duplicate its offering, thereby indicating their willingness to pay to get greater convenience or higher quality or fill some other perceived gap in coverage; that many of these subscribers continue as HMO enrollees indicates that they accept the plan's shortcomings as a price of lower premiums or other advantages. Where a plan's coverage is negotiated by employment groups, the limitations accepted may be presumed to reflect considered consumer choice, and there should be no problem about enforcing them in individual cases. In the case of individual policies, insurance regulators and the courts should be vigilant against unfair exclusions, but should avoid the mistake of insisting on comprehensiveness or total freedom of choice and of thereby foreclosing the most effective cost-containment techniques available to insurers and insureds.

The concern that real hardship might sometimes be imposed on an insured individual through the enforcement of a coverage limitation must not be overstated, for the whole object in designing coverage should not be to exclude anything that is both essential and expensive. While this object may not be perfectly achieved at reasonable cost, the rare cases of actual inability to pay for noncovered but necessary treatment should be easily within the health care system's remaining capacity for extending free care. Whereas governmental compulsion on the private sector to provide some coverage of catastrophic expenses may seem necessary to prevent "free-riding" on the health care system's charitable impulses, it is not inappropriate implicitly to rely, to some residual extent, on providers to buffer any serious side effects of competing insurers' cost-containment efforts (Havighurst et al., 1976). Physicians should recognize that insurer-sponsored exclusions from coverage or limitations on freedom of choice may well be in the best interests of insured consumers as a group and that it is within providers' power and traditional responsibility to prevent the rare case of severe hardship to an individual.

The discussion below distinguishes between two fundamentally different approaches to cost containment through the redesign of health insurance coverage. The first approach relies primarily on selectivity with respect to what specific services will be paid for or how much will be paid, whereas the second approach involves selectivity primarily with respect to the providers who are eligible to

provide covered services. Though their implementation may blur the basic distinctions, these two approaches differ substantially in the extent to which patients must face directly, with professional advice, the trade-offs involved in specific treatment decisions. The first approach contemplates many joint patient-physician decisions. The second approach, closely bordering on the HMO concept, relies on consumer choice only in the selection of a plan in a competitive environment and leaves treatment decisions largely to physicians alone. Which approach is preferable depends on many circumstances, not the least of which is consumer and provider preferences, and should be resolved through competition. Both approaches are conceptually valid ways of solving difficult cost problems through private arrangements in a free market.

SELECTIVITY IN BENEFIT PROVISIONS

One strategy for offsetting the moral hazard that health insurance so powerfully presents would be to make insurance policies much more detailed than they now are with respect to the services covered and the terms of coverage for each covered item. Even though administrative problems impose a significant limitation on the complexity that can be introduced and even though the tax law further reduces the savings that complexity might achieve, greater selectivity in benefits still seems a responsible approach to cost containment within traditional insurance arrangements. Employers and insured groups, as well as insurers themselves, should explore more fully the many possibilities for strategic exclusions. Blue Cross's recently announced policy of not paying for lab tests done routinely (without a doctor's order) on hospital admission is merely one particularly obvious example of the kind of measure that can be taken (Altman, 1978); it is significant, however, that Blue Cross's action avoided challenging the prevailing, but inappropriate, principle that anything a physician orders in good faith should necessarily be paid for.

Exclusion of a particular service from coverage may be appropriate for many reasons unrelated to medical need or circumstances. In large measure, the need for insurance against a particular risk is a function of the insured's income level, his savings, and his preferences about risk-bearing. Thus, expenditures that are small, relative to income and other factors, can be met out of pocket. Less obviously, steps in treatment that are highly discretionary and particularly subject to moral hazard could appropriately be excluded from coverage even though, in some cases, there would be a burdensome expense and no question whatsoever about medical appropriateness. The effect of an exclusion from coverage is, of course, to put the physician and the patient in the position of having to undertake a cost/benefit assessment, taking all the immediate circumstances into account. The physician would be expected to act in the time-honored capacity of professional advisor and fiduciary, with responsibility for the patient's financial situation as well as his health. In my view, this could be a highly attractive form for cost containment to take. Carefully

analyzed, this approach makes cost containment ultimately the responsibility not of the insurer--who merely defines and enforces coverage limitations--but of the physician-fiduciary acting in consultation with the patient.

With this conceptual framework established, it is possible to suggest some specific exclusions from coverage that insurers and insureds might jointly decide were rational, especially if the tax laws were changed to eliminate the incentive to overinsure. A likely development, if the tax law were changed, would be an increase in the size of annual deductibles, perhaps up to a point as high as 10% of income, where most physician-patient encounters would take place without insurance in the picture (See Feldstein, 1977). While many consumers might continue to elect comprehensive coverage, many others would gradually become educated to the high cost involved in avoiding relatively small out-of-pocket payments and would opt for more self-insurance of manageable risks. The future role of HMOs would depend, in large measure, on whether comprehensiveness of benefits, such as they offer, retains its attraction for consumers under a different tax treatment of premiums. Of course, more comprehensive coverage would be appropriate for subsidized persons at the lower end of the income scale since they could not be expected to bear a substantial self-insurance risk. HMOs might prove the best vehicle for meeting the needs of this population, but private insurance plans committed to covering medical needs in accordance with standards of practice prevailing in the larger market would be another possible mechanism.

Even if a major shift to higher deductibles and catastrophic-only coverage occurred, significant cost-containment problems would still exist beyond the threshold of "catastrophe." (See Havighurst, et al., 1976.) This challenge could also be met by selectivity in coverage. Possible exclusions in both catastrophic-only and comprehensive plans would include the following:

- experimental treatment and unproved technology--Such an exclusion would give patients and doctors a reason to carefully evaluate the evidence on new treatments and procedures as these advances appear. Plans could voluntarily expand to cover them either after efficacy was established by clinical trials or after market acceptance indicated their desirability. Regulation of innovations in clinical medicine and new technology, now being considered, might be avoided if the decentralized private sector undertook the task of assessing the cost-effectiveness of new developments rather than accepting doctors' choices without question.

- highly discretionary items--Exclusion would be desirable where medical appropriateness is in large measure a function of individual circumstances and/or preferences and the potential cost is not so high as to expose the patient to

undue hardship if coverage were not available when the care was in fact needed. A large copayment--say, fifty percent in a plan covering middle-income persons--might be used for a procedure such as coronary bypass surgery so as to find a roughly correct balance between financial protection and the need to discourage use of the procedure in marginal cases.

- extra hospital days beyond a certain minimum following a particular procedure--Exceptions to such an exclusion could be made for cases in which special complications were present. Imposing a self-pay obligation would surely shorten lengths of stay.

The exclusion thresholds for these types would depend on whether the tax law continued to induce overinsurance. Nevertheless, the principle of selectivity in coverage has merit whether or not the tax law is changed.

Another insurance strategy might be to require that prior authorization be obtained as a condition of coverage for some elective hospitalization and surgery. Thus, a plan would not pay for services when their appropriateness had not been confirmed in advance through agreed-upon procedures. Again, exclusion from coverage would not imply that the doctor's advice was misguided but only that the plan would not pay for something that was in a gray area. Because a plan would have to satisfy both consumers and providers as to the fairness of the mechanism employed in making these decisions, hardships should be kept to a minimum. The principles employed in making such decisions would undoubtedly vary from plan to plan, but one legitimate approach to choices in the gray area would be that, where the care is not obviously essential, choices are better made by patients and physicians facing the constraint of the patient's own resources.

Where exclusions from coverage occur, the insurer might stand ready to lend the patient the funds needed to finance the treatment if the patient and physician should elect to proceed with it. Not only would this approach spare the patient any immediate financial hardship and assure that needed care was not forgone because of a cash-flow problem, but it would also further undercut the possible implication that exclusion of something from coverage casts doubt on its medical legitimacy. The plan would have to accept a considerable risk of bad debts, but the insured group might find this way of avoiding hardship less costly, and thus more desirable, than the alternative of underwriting free care for all.

Another strategy that might be employed by insurers would be to use cash benefits based on diagnosis or on some other objective circumstance rather than reimbursing incurred costs or paying on the basis of the services in fact used. Where it was feasible, this approach would provide financial protection without undercutting incentives affecting consumption decisions. Even if they were not workable for

all purposes, cash benefits might be used selectively. For example, a lump sum might be paid to the patient to cover ancillary services with respect to certain hospitalizations. Thus, providers' and patients' cost consciousness with respect to such overused services would be heightened.

In order to give effect to detailed coverage provisions and to innovations along the lines of the foregoing discussion, provision would have to be made for predetermination of benefits in individual cases. Where nonemergency treatment was involved, the insurer would advise the doctor and patient as to what the patient's benefits would be, given the diagnosis and the possible methods of treatment. The physician and the patient then could make decisions with a clear idea of the resources available. Dental insurance plans have used predetermination of benefits to good advantage, and it would seem desirable for this mechanism to be selectively employed in medical care as a part of voluntary programs to reintroduce cost consciousness.

Obviously, the effectiveness of detailed coverage limitations, prior authorization, and predetermination of insurance benefits would depend heavily on provider cooperation. In traditional open-panel insurance plans, such cooperation has been difficult to obtain. Physicians have seen themselves as responsible exclusively to the patient. Frequently, they have been pressed to help patients make maximum use of their insurance coverage, by ordering unnecessary hospitalization when only hospital care was covered and by stretching diagnoses to bring treatments within the insurance policy. Thus, unless insurers can obtain provider cooperation in the administration of coverage limitations, these forms of cost containment cannot work very well.

The most straightforward and certain way of enlisting provider cooperation is through provider participation agreements that spell out, in detail, the physician's and the plan's respective responsibilities. Such participation agreements have been widely used in service plans in the past and are currently used under Medicare and Medicaid. It would seem easy enough to adapt them to give individual providers specific responsibilities with respect to the cost-containment effort, such as a duty to seek prior authorization or predetermination of benefits. Such participation agreements could be written so as to give effect to coverage limits without interfering with the doctor-patient relationship or the practice of medicine.

Some physicians may fear that private insurers' coverage limits, if administered along the lines suggested, would be highly regulatory and, therefore, indistinguishable from government controls. Yet there are profound differences that should make the market alternative attractive. First, insurance would not use administrative controls unless their cost was less than the net benefit derived for its insureds; government programs, not facing competition, operate under no such constraint and frequently squander resources unproductively. Second, participation in a given plan would be voluntary, not compulsory--as

government programs may soon become; providers as well as consumers must be persuaded to participate in a particular plan and will not do so if alternative plans are more attractive. Third, the crucial distinction between regulation and a coverage limitation--namely that a coverage limit does not interfere with or second-guess medical judgment--is more likely to be scrupulously observed in a private system. Fourth, the freedom for new plans to enter the market to satisfy complaints should provide an ultimate protection against overbureaucratization and inappropriate controls.

Although the foregoing speculations contain some suggestions that may seem extreme, the point is not that these things will happen but that, in a functioning market, private actors will seek those combinations of strategies that best accommodate the various conflicting interests. Gradual evolution, featuring experimentation and adaptation, is much more likely than the upheaval associated with mandatory government programs. My guess is that, if the tax laws were changed, large deductibles would remove a great deal of care from the insurers' province, and leave benefit limits and administrative controls to operate mostly with respect to expensive catastrophic disease. In these costly cases, close monitoring would be justified, though provider participation agreements would probably lead to many insurer-provider relationships based on trust, permitting a lightening of petty administrative burdens. Using data that it would quickly accumulate, an insurer could learn which physicians were inclined to exploit the system and required special attention.

SELECTIVITY TOWARD PROVIDERS OF COVERED SERVICES

A conceptually different strategy by which health insurers can control costs both to themselves and to their insureds involves practicing selectivity not primarily with respect to benefits but with respect to the providers whose services are covered. The essential element in this strategy is a health plan's ability to deny certain providers the right to draw on the insurance fund. By adopting any of a variety of closed-panel arrangements, a plan could assure that only providers who have learned how to economize in the use of health care resources would serve the insured group at the insurer's expense. In addition to being selected with a view to their economizing skills, however, the covered group of providers might also impose formal or informal controls on its own members in order to enforce efficiency while maintaining quality and the plan's good reputation. The impetus to seek the right balance between economy and spending on enhanced quality, convenience, and other desirable features would come ultimately from the competitive environment.

The closed-panel concept has long since demonstrated its efficacy in prepaid group practices. More recent variations on the concept, known generally as "Individual Practice Associations" (IPAs), have involved less integration of the participating physicians and have retained the fee-for-service mode of payment in lieu of salaries or

other compensation arrangements such as are feasible in partnerships or other integrated practice. While less tested than group-practice HMOs, IPAs are less radical departures from traditional concepts. Therefore, they seem unlikely to raise new quality concerns. By the same token, however, their efficiency remains open to question. Nevertheless, as experience with at least one IPA (that in the Minneapolis-St. Paul area) shows, the model can be made reasonably efficient if competition stimulates it to strive in that direction (Christianson, 1978).

While the term IPA appears in the federal HMO Act, the concept of a loosely associated set of fee-for-service physicians, participating as providers of covered services under a particular prepayment plan, may be adopted without accepting the comprehensive benefit package and other restrictions imposed by the federal statute. The degree of formality and integration of the IPA may vary widely. Thus, the covered providers might be identified only by their having individually signed agreements with an insurer, or they might constitute a large and fully integrated multispecialty group practice that had not previously been separately rated for insurance purposes. Inclusion of one or more hospitals and perhaps other needed facilities along with physicians as providers of covered services would yield what Dr. Paul M. Ellwood, Jr., has called a "health care alliance" (Reynolds, 1977).

Under any of the contemplated closed-panel arrangements, the insurer's premium would directly reflect the presumably superior efficiency of the covered providers. In effect, therefore, the insurer is able to market the group's particular ability to deliver quality care for less money. In contrast, under traditional insurance, which covers care provided by all providers, the efficiency of some providers is averaged with the inefficiency of others in arriving at experience-rated premiums for the entire insured group or population. Consumers are not rewarded for choosing lower-cost providers, and providers are denied the opportunity to capture the benefit of their comparative efficiency. To illustrate, several multispecialty group practices, which are organized to utilize the hospital sparingly, have found it advantageous to adopt the HMO model and become prepaid group practices. By thus marketing their efficiency, these groups are able to receive a substantially larger share of the premium dollar than accrues to physicians in the typical insurance plan. The same opportunity would be available for physician organizations and hospitals who, instead of adopting the prepaid group practice model, could persuade an insurer to underwrite them independently of other fee-for-service providers and market them as an added option—a health care alliance--to employment groups.

Another type of efficiency that a particular closed panel might enjoy would be with respect to malpractice claims and insurance. If the group had a better-than-average experience, it should qualify for lower liability insurance premiums or it might profit from partial or total self-insurance. More fundamentally, the insurance contract

might provide for an alteration of the patient's malpractice rights, thereby substituting an agreed-upon legal regime for the inefficient one currently in effect. Already HMOs have been permitted to enforce malpractice arbitration clauses in their basic contracts.[2] In addition, it might be possible to introduce a "no-fault" remedy, along the lines that O'Connell (1975) and Havighurst (1975) have independently proposed, as a quid pro quo for the insureds' waiver of their right to sue in tort for certain adverse outcomes. By reducing both the need to pay lawyers and the pressure on doctors to practice "defensive medicine," such changes in the malpractice regime would benefit both physicians and patients. The potential for cost-saving innovation here would seem to be considerable.

The initiative in organizing an IPA or a health care alliance can come either from the insurer or from the physicians themselves. Given insurers' traditional passivity and noncompetitiveness and their apparent expectation that they will soon be given a major role under national health insurance without changing their behavior, physicians may be the more promising source of innovation. Although one insurer (the Safeco plan) has required its insureds to select a primary care physician from a panel of doctors who have special arrangements with the insurer that induce them to monitor the costs of referrals and hospitalization (See Enthoven, 1978), most insurers remain wedded to their traditional modes of doing business with physicians and to challenging professional prerogatives as little as possible. Although antitrust enforcement may allow insurers' habits of deference to change, it may be that organizational initiatives, if they are to occur at all, are still more likely to come from physicians than from insurers to the first instance. Nevertheless, barring conspiracy, it should not be difficult for a provider group to enlist an insurer's aid in implementing its plans.

The most likely source of reorganizational initiatives in the medical community probably exists in multispecialty group practices. Organized groups have the option of adopting the HMO approach, thus accepting financial risks, or remaining in the fee-for-service mode with their patients being specially enrolled and separately rated by the underwriter. Other initiatives might come from a nucleus of solo practitioners or single specialty groups who might catalyze, or be catalyzed by, an insurer. Perhaps a hospital and its medical staff or an established referral network could supply the needed entrepreneurial stimulus.

The rewards for efficient providers who discover ways to market their efficiency would seem to be potentially large. Judging from HMOs' experience, efficient practice can yield 10% to 40% savings (Luft, 1978), no more than a fraction of which would have to be shared

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[2]Madden v. Kaiser Foundation Hosps. 17 Cal. 3d 699, 552 P.2d 1178, 131 Cal. Rptr. 882 (1977); Doyle v. Giuliucci, 62 Cal. 2d 606, 401 P.2d 1, 43 Cal. Rptr. 697 (1965.)

with consumers to induce their enrollment in the plan. Higher fees—perhaps well in excess of normal fee screens--would, thus, be entirely compatible with the lower premiums to consumers. Although competition might in time force greater sharing of savings with consumers, a well-established plan with a good reputation in its community should always be able to command a premium price and be able to reward its physicians handsomely. Fee-for-service physicians should recognize the advantages that can flow from establishing both an entrenched market position and a good reputation before HMO developments and increasing numbers of new medical school graduates begin to flood the market. Indeed, physicians who cling too long to traditional financing mechanisms for their sustenance will probably find that they are increasingly dependent on government programs and that the more attractive practice opportunities have already been seized by others or must be intensely competed for. Although there should be no doubt that the private market will always reward professional excellence, those physicians who establish themselves earliest in strategic positions will have the best potential for future security.

While certain types of physician-sponsored IPAs are promising vehicles for carrying out the market strategy, others are positive barriers to its implementation and present severe antitrust problems. Many IPAs are closely associated with organized medicine, and, although they may have been stimulated by competitive threats from HMOs or the aggressiveness of third-party payers, they cannot be regarded as being among the initiatives that are the key to a market solution (See Havighurst, 1978). Although all physician-sponsored IPAs, as joint ventures organized by competitors, must bear scrutiny under the Sherman Act's prohibition of combinations in restraint of trade, some will survive such scrutiny better than others. A plan of the closed-panel variety, while involving some elimination of competition among the participating providers, has procompetitive benefits as well and would violate the law only if it threatened to dominate the market. On the other hand, a profession-sponsored open-panel plan, serving a defensive purpose for the profession as a whole, raises grave antitrust concerns. The FTC's staff, in exploring ways to curb organized medicine's control of prepayment plans such as Blue Shield, has considered proposing a rule of thumb that would allow a physician organization to control a plan only if fewer than, say, 50% of the primary-care physicians in the community were eligible to provide covered services. The logic of such a rule, in effect, enforcing the principle of selectivity in physician-controlled plans, should be apparent from this discussion.

The medical profession must be prepared to face an antitrust challenge to IPAs that are controlled by medical societies or otherwise operated by doctors in the professions' collective interest. It probably will not be regarded as a sufficient defense that IPAs may have some beneficial effects in lowering costs, since collectively operated plans cannot be expected to duplicate the results of competition. Antitrust doctrine, developed through long experience, has come to presume

conclusively that, unless Congress has created an explicit exemption for some area of economic activity, the results of competition will always be preferable to industry-wide collaboration.

THE TWO MODELS COMPARED

The closed-panel model, based primarily on selection of providers on the basis of efficiency and competence, seems the most promising vehicle of meaningful change and effective cost containment in the immediate future. It has the merit of simplicity when compared to the alternative of redesigning benefit packages to shift specific questionable costs and some hard choices back to consumers acting with professional advice. The latter strategy's complexity would probably render it practically unworkable, except for a few specific items, unless it could be coupled with large deductibles, leaving explicit exclusions to operate in only a small minority of relatively costly cases. Given a tax law which heavily penalizes this strategy, an approach that would rely more on provider than consumer incentives in medical decision-making and on implicit rather than explicit consumer choices probably holds greater immediate promise. It is for this reason that HMO-type strategies, employing the closed-panel concept, have dominated the current agenda of reformers interested in solving the cost problem through reliance on consumer incentives and competition.

The relative attractiveness of the two models would also depend heavily on people's preferences concerning their direct participation in medical decision-making. Whereas some persons would undoubtedly prefer to place themselves entirely in their physician's hands, others might wish a greater voice in the decisions made concerning their health. A plan that uses large deductibles and selective benefits anticipates that patients will make more choices--though this is not necessary if one trusts his physician to address the trade-offs on his behalf. Nevertheless, such plans would seem more appropriate for persons who wish to retain greater control over their treatment and to have the options spelled out even when that explicitness itself involves somewhat greater cost. Closed-panel plans, particularly those featuring provider prepayment and risk bearing, allow people to choose physicians on the basis of their reputation and style of practice but with somewhat less expectation that they will be allowed as patients to influence the spending decisions made concerning their care. Both types of plan would seem to have a place in a free market.

In the last analysis, the two conceptual models developed here for reshaping private health insurance to address the cost problem are not so distinct as this discussion makes them appear. In some respects, the two concepts ultimately blend to the point where differences are merely a matter of emphasis or of shading across a spectrum. On the one hand, the more integrated plans or the ones whose providers are more carefully selected can be viewed as embodying implicit benefit limitations, because the chosen providers'

benefit/cost decisions, in which patients are not directly involved, have the practical effect of limiting coverage; likewise, HMOs represent consumer acceptance of a particular regime of provider-controlled rationing. On the other hand, an insurance plan with numerous explicit limitations and exclusions cannot function without enlisting cooperative providers, whose judgments will greatly influence patients' choices; it must therefore restrict the eligibility of some providers to render covered services, perhaps excluding altogether those who are unwilling to adhere to prescribed administrative procedures. Thus, in either case, the plan's ability to hold the physician accountable under a contractual participation agreement, subject only to the physician's freedom to pursue other alternatives, is the crucial element. This accountability to the consumer's chosen agent, plus the discipline exerted by consumers over the plans themselves, is the essence of competition. It should be apparent why an FTC administrative law judge recently held unlawful the medical profession's ethical injunctions against physicians' sale of their patient care services under contracts with lay organizations.[3]

In view of the many exigencies and the wide differences in individuals' tastes and perceptions, a range of approaches to cost containment is both desirable and available. Only a relatively free competitive market, restrained by neither government nor organized medicine, can provide an environment conducive to the kinds of creative innovation and experimentation needed to find the right mix of competing strategies and entities to satisfy the various individual expectations of both consumers and providers.

THE ISSUE OF FREE CHOICE

As noted, either of the two general approaches that insurers might embrace in pursuit of cost containment involves some exclusion of providers from the right to treat plan subscribers at the insurer's expense. Under the second approach, focusing primarily on provider incentives, this is, of course, the crucial element, while, under the approach of strategically limiting insurance coverage, the use of provider participation agreements is probably a practical necessity due to the administrative problems that must be overcome. It is predictable that questions will be raised in either case concerning the deprivation of free choice to both patients and providers.

The medical profession has long attached paramount importance to patients' free choice of physician. While free choice is certainly a value, the profession has given it an emphasis that is out of proportion to its importance to consumers, and has used it to rally support for, and to legitimize, policies and practices antagonistic to competition. Perceiving a danger to the profession if its ranks should be divided into competing closed panels, the profession coined the phrase "free choice

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[3] American Medical Association, FTC Dkt. 9064, Initial Decision, Nov. 13, 1978.

of physician" and persuaded itself and others of this value's overriding importance. Although organized medicine has long conceded the legitimacy of group-practice HMOs, continuing professional antagonism to HMOs at the local level has regularly fed on the free-choice shibboleth. Commercial insurers and service-benefit plans have also tended to treat free choice as an absolute rather than a relative value. The campaign for a competitive market in health services requires that the issue of free choice be put back into correct perspective.

Obviously, consumers who choose one closed panel over another or over a plan offering unrestricted choice are exercising a free choice. The only remaining issues are whether the consumer was offered a reasonable range of choices in the first place and whether he has reasonable opportunities to change his mind if he decides he has made a mistake. On the latter question, at least an annual opportunity to renew one's election is almost universally provided and would seem entirely sufficient, especially since regulation is likely to assure that no choice is catastrophically wrong and since the patient can, if he feels the need, purchase care outside the plan.

The range of choice originally offered to the consumer is a more complex matter. Consumer members of an insured group, which, as a whole, might not accept significant restrictions on individuals' choices, could readily be offered on an individual basis by a single insurer the option of selecting a closed panel (or a limited-benefit plan restricting their choice to cooperating providers) instead of the traditional free-choice (or comprehensive-benefits) plan, which would carry a higher premium. Other possibilities available to a single innovative insurer include payment of participating and nonparticipating providers on different terms, influencing but not altogether dictating the patient's choice. Further, the sponsor of the insured group (usually an employer under the present tax system) could arrange for the insureds to select among a number of independently offered options. The federal HMO Act requires each major employer to offer up to two qualified HMOs as alternatives to any other health benefits plan it maintains, but employers need not limit themselves to meeting this requirement and could offer all reputable plans in the area. Such "multiple choice" is currently offered to federal employees under the Federal Employees Health Benefit Plan, a model that Professor Enthoven has adapted in his Consumer-Choice Health Plan (Enthoven, 1978).

Employed consumers should be in a strong position to demand and obtain a range of choice. Heretofore, however, employers have perceived a single, free-choice insurance plan with comprehensive benefits to be all that their employees require. It is ironic that additional options involving less choice are needed to widen the consumer's true freedom of choice. By the same token, organized medicine's tactic of vigorously supporting free choice--but only where cost was not a prominent factor in the consumer's decisions--has long subverted the competitive principle that it seemed to uphold.

Freedom of choice is also important for physicians, who should also have a range of variety of market opportunities available to them. Where a single prepayment plan dominates a particular market, it can treat local providers unfairly, using its excessive buying power--monopsony power, as economists call it--to dictate practices and to drive fees below competitive levels. Providers are understandably nervous about being dictated to by a third party without recourse, and they are entitled to assurances that competition will be made to work for their own as well as the consumer's protection. The Supreme Court has recently held that the antitrust laws are available to test the claim that a dominant buyer is using insurer-provider agreements to coerce or exploit providers.[4]

An interesting recent proposal to widen consumer choice, attributable to Dr. Walter McClure, would allow favorable tax treatment of employer-paid health plan premiums only if the employer makes several competing health plans available to its employees and makes the same cash contribution regardless of which plan the employee chooses.[5] In addition to giving consumers new opportunities to economize, this proposal would also benefit providers by breaking down the buying power of a single employee group and by improving new plans' access to the market. Physician groups' freedom to design and offer their own competing plans is an important guarantee that doctors' legitimate interests will be safeguarded.

CONCLUSIONS

That the precise outcome in a restored competitive market cannot be predicted is no argument for rejecting the market alternative. Indeed, its unpredictability is the best argument for choosing the market approach, since, if we knew what people would choose, we could legislate that result today and be done with it. Even if one were to believe, as many seem to do, that changing consumers' incentives and restoring competitive conditions would not affect outcomes appreciably, that is not an argument against making the recommended changes. Once competitive conditions are restored, the result, whatever it is, would have legitimacy as the product of a functioning marketplace, something wholly lacking in the present state of affairs. The need for comprehensive regulation would then be much harder to establish since it would not be clear why private choices should be second-guessed. The important thing should be not so much the result itself--for example, the share of GNP dedicated to health care--,which we have no good standard for judging, as the process by which that result is reached. This process must be one that we can trust to reveal people's preferences and to adapt as those preferences change. Poten-

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[4] Group Life & Health Ins. Co. v. Royal Drug Co., 99 S. Ct. 1067 (1979).

[5] Personal communication. Professor Enthoven has also endorsed this idea.

tially, at least, the competitive market has a comparative advantage over the political processes of government in meeting these requirements in the health care sector.

The McClure proposal, mentioned above, for conditioning favorable tax treatment of employer-paid premiums on the offering of several different health plans would go far toward introducing choice and encouraging the development of real alternatives embodying the cost-containment techniques elaborated in this article. McClure contemplates that employees would receive tax-free the savings that they achieve by selecting a low-priced rather than a high-priced plan. This feature would put private incentives in order and strengthen the case against regulation of the private market. Moreover, its political prospects would seem bright because it would not expose members of unions and other groups now accustomed to high-priced benefits to higher taxes. Even if the tax treatment of employer contributions is not changed so employees can capture any savings tax free, McClure's proposal would still be beneficial. It deserves the support of everyone interested in heading off an expanded governmental role in private medicine.

Even if the tax laws are left unchanged, under the excuse that it is politically infeasible to tamper with them, government's regulatory initiatives in the private sector do not thereby become automatically justified as necessary to cure a market failure, and they may still be criticized as more self-aggrandizing than socially imperative. Subsidies such as the tax law provides for the purchase of health insurance are quite common in the larger economy, and do not, in themselves, invalidate reliance on the marketplace to allocate resources. Moreover, if government lacks the will to take the straightforward step of changing tax rules to improve private incentives, then it is entirely fair to ask that it accept the consequences of that choice and not meddle any further in the private market. Even with the tax laws as they are, the private market can function usefully--now that active antitrust enforcement is curbing trade restraints that have prevented it from doing so in the past (See Havighurst, 1978)--though obviously the equilibrium it seeks will be determined, in large part, by the tax subsidy. In short, it can be argued with some force that heavy-handed regulation is not even a second-best strategy when compared with the market's ability to correct the private insurance system's non-tax-induced defects.

On the other hand, it would be unreasonable to expect government not to tinker with its own financing programs, Medicare and Medicaid. Originally organized on nonmarket principles, these programs cannot be changed overnight and are appropriately continued in essentially their present form until market forces have taken hold in the private sector. National health insurance can then be designed with a larger role for the private sector and with subsidies provided in forms that give the beneficiaries of public programs both good access to the private market and some incentive to economize (Enthoven,

1978; Havighurst, 1977). In the short run, the government must be encouraged to confine its interventions to those areas, such as Medicare and Medicaid, where competition is not working and to tailor its move so as to encourage rather than discourage the development of competitive approaches to financing and delivery. The sooner government can get the private sector effectively to work on the cost-containment problem, the sooner it will be able to deliver on the promise of national health insurance. In the interim, regulation must not be allowed to foreclose choices that would be rational for a significant segment of the population. Only a pluralistic system in which providers and consumers can face the myriad trade-offs in light of their own values can hope to serve well, and indefinitely, a nation as diverse as the United States.

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Board-Certification, Malpractice Claims, and the Case-Mix Problem *by Kathryn M. Langwell and Sharon R. Henderson**

INTRODUCTION

There has been a dramatic increase within the last five years in the number of physicians choosing to become board-certified. Between 1970 and 1975 a 48-percent increase in the number of board-certified physicians is reported (see Roback, 1970; Henderson, 1977). Over the same period, the total number of physicians in the U.S. increased by only 9.5 percent (see Haug, et al., 1971; Goodman and Mason, 1976).

Whether or not this trend toward board-certification may be interpreted as an increase in the availability of care at some minimum quality level is unclear. Arguments supporting the relationship between board-certification and higher quality of care are based on the assumption that the board-certified physician has presumably invested additional time in training than has the non-certified physician and has demonstrated that his knowledge of a medical area is sufficiently high to meet the board-certification requirements (Williams and Brook, 1978).

On the basis of the assumption that board-certification may lead to higher quality of care in some practice situations and for selected services, it may be reasonable to hypothesize that board-certified physicians are less likely than non-certified physicians to have a malpractice claim filed against them. Although there have been several attempts to examine the relationship between board-certification status and the incidence of liability claims, the results of such studies have had inconsistent conclusions. In a study released in December, 1978, the National Association of Insurance Commissioners reported on 16,592 claims closed from July 1, 1976 to June 30, 1978. By a method of analysis that took into consideration both the average number of procedures performed by each specialty as well as the relative value of each procedure, the authors were led to conclude that board-certified surgeons had significantly lower ($p < .001$) average indemities paid per value-weighted procedure than did non-certified surgeons practicing the same specialty (National Association of Insurance Commissioners, 1978). In another closed claim study (Westat, 1976), the authors concluded that physician board-certification status did not appear to be an important malpractice risk factor,

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even though physicians for whom claim payments were made were more often board-certified than physicians in general.

A number of factors are present which obscure the relationship between certification status and professional liability experience. Board-certified and non-certified physicians are not homogeneous groups. Board-certified physicians tend to be younger, practice more often in urban locations, and are more apt to be in surgical or other referral specialties (Langwell, 1979). In addition, board-certified physicians may be expected to have a higher concentration of patients representing both more severe and more complicated cases which carry a higher risk of uncertain outcomes.

The purpose of this study is to examine the relationship between board-certification, malpractice claims experience and case-mix severity. A preliminary contingency table analysis examines the direct relationship between certification status and claims experience. A model is then developed and estimated to examine this relationship while controlling for factors such as personal characteristics of physicians, practice mode, and location of practice. A second stage of the study investigates the relationship between case-mix severity and board-certification status.

Data for the study are from the American Medical Association's (AMA) Eleventh Periodic Survey of Physicians, an annual survey designed to collect information on physicians' office practice characteristics. The survey was directed to a random sample of physicians who were in active, non-federal, office-based, medical practice during 1977. The mailed survey questionnaire included a section on professional liability insurance including coverage, annual premiums, claims experience, and physicians' reactions to increased liability premiums. There were 4,709 completed and usable responses to the professional liability section of the survey (Henderson, 1978).

PRELIMINARY ANALYSIS

In order to obtain an initial view of the relationship between board-certification status and the likelihood of a liability claim, physicians are categorized into four broad specialty groups which include: general or family practice, medical specialists, surgical specialists, and other specialists (Goodman, 1977). Within each specialty category, physicians are further categorized by their specialty board-certification status (certified, non-certified) and by a "yes/no" indicator of claims experience obtained from the survey question: "Have you ever had a malpractice claim filed against you?" The information regarding claims experience is less precise than would have been desirable. First, no time limit on the occurrence of a claim was specified on the questionnaire. Second, the survey did not discriminate the number of claims against a physician. Finally, no information was available from the survey regarding the disposition of the claims that were filed.

The Chi-square tests of this preliminary investigation are shown in Table I. Differences in the likelihood of having had a malpractice claim filed, by board-certification status, are not significant for those physicians in general/family practice or in a medical specialty. However, for the surgical specialties, the likelihood of a malpractice claim is greater when the physician is board-certified, with a Chi-square value indicating a significance level of .001. Similar and significant ($p < .025$) results are also obtained for the "Other Specialties" category in that board-certified physicians are more likely to report that a malpractice claim had been filed against them.

In order to obtain a summary measure of association between certification status and claims experience, the evidence presented in Table I from each of the four specialty categories is combined. The method employed combines the logarithms of the odds ratios from each of the four specialty four-fold Tables (Fleiss, 1973). It is then possible to determine: 1) if the relationship between board-certification and claims experience is consistent from one specialty group to another, and 2) if the common degree of association is statistically significant. A best estimate of the common degree of association may also be computed.

The results of this analysis indicate that the relationship between board-certification status and claims experience is statistically consistent from one specialty group to another ($\chi^2(3) = 6.398$, $.05 < p < .10$). Further, when specialty is disregarded entirely, board-certified physicians are significantly more likely ($\chi^2(1) = 13.001$; $p < .001$) to have malpractice claims filed against them than are non-certified physicians. An estimate of the mean odds ratio, $\bar{o} = 1.29$ (see $(\bar{o}) = .092$) indicates that board-certified physicians are 1.29 times more likely than non-board-certified physicians to have malpractice claims filed against them.

While it might be concluded from this preliminary analysis that a definite and positive relationship exists between certification and claims experience, it is important to note that other intervening factors have not been accounted for in this simple approach. As mentioned previously, the two groups of physicians examined here, board-certified and non-certified, are non-homogeneous in terms of several characteristics other than certification status. Age distribution, geographic distribution, country of training, and other characteristics of physicians differ by certification category. In the next section, a model is developed to examine the relationship between board-certification and claims experience, holding these other factors constant.

MODEL AND METHODOLOGY

A major goal of this study is to develop an explanatory model of professional liability claims in order to examine the relationship between certification and claims experience. The dependent variable, CLAIM, is the reported presence or absence of one or more claims

against each physician in the sample. The explanatory variables chosen for the analysis include those characteristics of the physician most likely to differ for board-certified and non-certified physicians, and those which, aside from certification status, may be expected to affect the probability of a liability claim occurring. A description of the variables included in the estimation equation are presented in Table II.

Sex of the physician is included since proportionately fewer women physicians are board-certified than men. Three specialty categories (GP, MEDSPEC, SURG) are selected as explanatory variables as the proportion board-certified/physicians varies by specialty. From the preliminary analysis, it is expected that the probability of a claim will be higher for surgical specialties than for medical specialties. This expectation is also supported by the NAIC (1978) study.

Variables for rural and urban locations of practice are also examined as board-certified physicians tend to be located in urban areas. It is expected that URBAN will be positively associated with CLAIM since urban residents have easier access to legal services, may be less likely to have a personal relationship with their physician, and obtain a larger quantity of medical services than do rural residents. In addition, the rural-urban dichotomy acts as a proxy for differences in demographic characteristics of the population and for availability of medical and legal services. YRSPRAC is expected to be positively associated with CLAIM since the longer the physician is in practice the more exposure he has to the risk of a claim.

There has been much controversy about the ability of foreign medical graduates to provide a quality of care similar to that of U.S.-trained physicians. Previous evidence on this issue is mixed (Heilmann, 1978), and no prior expectations on the direction of the relationship between FMG and CLAIM are warranted.

GROUP is coded 1 if the physician is in a group practice. This practice mode may be expected to be negatively associated with CLAIM to the extent that the physician has easier access to other physicians for consultation and referral of difficult cases. However, group practice may also imply that the patient has a less personal relationship with the individual physician in the practice and this factor, if present, may increase the likelihood of a claim.

MEDAFF is coded 1 if the physician indicated that he had a part-time affiliation with a medical school. It is expected that a physician in this category would be less likely to have a liability claim since he would be exposed to new medical research findings and information within the medical school environment.

Census regions are included as dummy variables for the Northeast, South, and West Census Regions, respectively. Previous research indicates that there are substantial variations among Census Regions in demographic characteristics of the population, availability of health resources, and legal services availability and that the probability of a

Table II: Definition of Variables (N=4,709)

Variable Name	Description of Coding	Mean Value
CLAIM	= 1 if a malpractice claim reported; 0 otherwise	.324
KSEX	= 1 if female; 0 otherwise	.046
SPECCERT	= 1 if certified in specialty of practice; 0 otherwise	.564
GP	= 1 if in general practice; 0 otherwise	.213
MEDSPEC	= 1 if in medical specialty; 0 otherwise	.246
SURG	= 1 if in surgical specialty; 0 otherwise	.323
RURAL	= 1 if in county with population less than 50,000; 0 otherwise	.092
URBAN	= 1 if in an SMSA county with 500,000 or more population; 0 otherwise	.629
YRSPRAC	= No. of years since graduation from medical school	25.065
FMG	= 1 if medical school of graduation was non-U.S.; 0 otherwise	.139
GROUP	= 1 if in group practice; 0 otherwise	.477
MEDAFF	= 1 if teaching part-time in a medical school; 0 otherwise	.171
CENONE	= 1 if in Northeast Census Region; 0 otherwise	.253
CENTWO	= 1 if in in South Census Region; 0 otherwise	.272
CENTHR	= 1 if in West Census Region; 0 otherwise	.230

Source: "Eleventh Periodic Survey of Physicians." Center for Health Services Research and Development, American Medical Association, 1977.

malpractice claim varies with geographic regions and practice environment (see Langwell and Werner, 1979).

SPECCERT is coded 1 if the physician is board-certified in the primary specialty of practice. The expectation is that the relationship between board-certification and CLAIM will be less substantial than findings in the contingency table analysis indicated. The strong positive relationship identified in the analysis using four-fold contingency tables is due, in part, to failure to account for other factors which differ between the two groups and which may also be related to professional liability claims experience.

Medical liability claims may also be affected by severity of case-mix. The influence of a larger proportion of more serious cases on the probability of claim could not be estimated directly. It is hypothesized, however, that a board-certified physician would tend to have a more severe case-mix than a non-certified physician, ceteris paribus. If this is the case, then it is expected that a positive relationship between board-certification and CLAIM will persist, but will be smaller in magnitude as other factors are controlled for.

Given that the dependent variable is qualitative in nature (coded 1 if the physician reported a claim or 0 if no claim was reported), logit analysis was chosen as the theoretically preferable analytic technique (Nerlove and Press, 1973). Use of logit analysis in this study yields coefficients which may be examined initially for sign and significance of each variable as a factor influencing CLAIM. In addition, each variable may be evaluated separately, using the logistic transformation, to determine the effect of that variable on the conditional probability of occurrence of a claim. This method of evaluation is used to examine the effect of board-certification on the probability of occurrence of a liability claim for selected cohorts of physicians when all other factors are held constant.

FINDINGS

Results of the analysis are presented in Table III, with estimated coefficients shown in the second column. The majority of the explanatory variables are significant as determinants of liability claims at the five percent level or above. Only MEDSPEC, FMG and CENONE (Northeast) are not significant. The direction of the association is as predicted for all variables for which prior expectations were indicated in the discussion above. Characteristics of the physician and his practice which reduce the likelihood claim will occur include: female physician, medical specialty, rural location, foreign medical graduate, affiliation with a medical school, and South Census Region practice location. Variables which influence positively the likelihood of a claim are: board-certification, general practice, surgical specialty, urban practice location, years practiced, group practice, and practice location in the Northeast or West Census Regions. The conditional probability of a claim occurring, for the entire sample, is shown in the last row of Column (2). This value is

Table III: Results of Logit Analysis (Maximum Likelihood Estimates). Estimation 1: Claim

Explanatory Variables	Estimated Coefficients	$(\partial P/\partial X_i)^a$
CONSTANT	-0.9332** (11.8416)	
KSEX	-0.4174** (4.3609)	-.0974
SPECCERT	0.1114** (2.9509)	.027
GP	0.2465** (4.5969)	.0251
MEDSPEC	-0.0796 (1.5783)	-.0602
SURG	0.5039** (11.1299)	.1151
RURAL	-0.1342* (2.0487)	-.0568
URBAN	0.1669** (4.4080)	.0434
YRSPRAC	0.0081** (5.0431)	.0096[b]
FMG	-0.06432 (1.2814)	-.0156
GROUP	0.1163** (3.3747)	.0283
MEDAFF	-0.0963* (2.1504)	-.0233

(continued)

Table III (continued): Results of Logit Analysis (Maximum Likelihood Estimates). Estimation 1: Claim

Explanatory Variables	Estimated Coefficients	$(\partial P/\partial X_i)^a$
CENONE	0.0354 (0.7640)	.0045
CENTWO	-0.1386** (3.0039)	-.0486
CENTHR	0.2371** (5.1069)	.0653
CONDITIONAL PROBABILITY $(\bar{P})^c$	.4158	

*Significant at the 0.05 level.

**Significant at the 0.01 level.

[a]Change in the probability of occurrence if the variable takes on the value of 1 rather than 0 for all variables except YRSPRAC.

[b]For YRSPRAC, the change in probability is for a change from 10 years in practice to 20 years in practice. This interval was chosen arbitrarily for purposes of illustration.

[c]$\bar{P}$ is the conditional probability obtained by evaluating the entire model at the sample mean. The equation used to compute $\bar{P}$ is:

$$1/1+e^{-t},\ t = \sum_{i=1}^{n} b_i m_i + C$$

where b_i = coefficient of variable i, m_i = mean value of variable i, and C = constant.

obtained by evaluating the entire model at the sample mean, and it indicates that the overall probability of occurrence for the sample is 41.6 percent.

In order to evaluate the impact of each explanatory variable on the probability of occurrence, $\partial P/\partial X_i$ is computed for each variable. For each variable except YRSPRAC,[1] $\partial P/\partial X_i$ is the change in the probability of occurrence which results when the variable takes on a value of 1 rather than 0. For example, if the physician is male (KSEX = 0), the probability of a claim is 42.04 percent. If the physician is female (KSEX = 1), the probability of a claim is 32.3 percent. The change in the probability of occurrence resulting from the change in the value of KSEX, then, is -9.74 percent. The interpretation is the same for all the explanatory variables except YRSPRAC. The arbitrary values used to evaluate the effect of years practiced on the probability of a claim are 10 years and 20 years in practice. All other things equal, the 10-year increase of years in practice raises the probability of a claim by approximately one percent.

The information in Table III indicates that, when all other variables are considered, the impact of board-certification on the probability of a claim occurring remains positive. The change in the probability of occurrence as SPECCERT changes from 0 to 1 is 2.71 percent. This percentage is smaller than that indicated in Table I for Surgical Specialties and Other Specialties, but slightly larger than the difference found for General/Family Practice and Medical Specialties.

To illustrate the impact of board-certification on claims experience, cohorts of physicians with selected characteristics were chosen and the conditional probabilities calculated for each cohort. The cohorts include board and non-board-certified physicians in the specialty groups by URBAN, GROUP, and CENTHR (West). For each cohort shown in Table IV, board-certification has a positive, though small, effect on the probability that the physician reports that a claim has occurred. The relationship, however, is of less magnitude than the contingency table analysis indicated. These findings are consistent with prior expectations and are presumed to reflect the more severe case-mix of the board-certified physician, as discussed above.

THE CASE-MIX PROBLEM

Case-mix is a critical issue in studies of this type (Berry, 1976). Holding other factors constant, the likelihood of a malpractice claim should be positively related to the severity of the physician's case-mix. Data seldom are available, however, to permit standardization for this factor.

The additional training and credentials of board-certified physicians suggests that these physicians may have a more complex case-mix than do non-board-certified physicians. If so, then the higher probability that board-certified physicians will report a liability claim

Table IV: The Influence of Board-Certification on the Conditional Probability of a Liability Claim, for Selected Cohorts of Physicians

Physician Cohorts	Specialty			
	All Specialties	GP	Medical Specialties	Surgical Specialties
Non-Certified	.4004			
Certified	.4274			
Non-Certified, Urban	.4155	.4280	.3490	.4922
Certified, Urban	.4426	.4551	.3761	.5193
Non-Certified, Urban, Group	.4307	.4432	.3635	.5075
Certified, Urban, Group	.4578	.4703	.3906	.5346
Non-Certified, Urban, Group, West Census Region	.4833	.4959	.5157	.5594
Certified, Urban, Group West Census Region	.5104	.5230	.5418	.5865

Note: a) The cohorts are defined as follows for each of the specialty classes:

URBAN = 1 if practice location is in an SMSA county with 500,000 or more population; GROUP = 1 if physician is a member of a group practice; CENTHR = 1 if practice location is in the West Census Region; SPECCERT = 0 if Non-Certified in primary specialty; SPECCERT = 1 if Certified in primary specialty.

b) For all cohorts, conditional probabilities are based upon a mean value of 25.065 years in practice (YRSPRAC).

may be the result of the omission of a variable representing case-mix severity.

Evidence on this issue is available indirectly from the survey questions on physicians' reactions to changes in the malpractice environment. One of the survey questions asked respondents whether or not they had refused certain cases because of liability considerations. Respondents answering affirmatively may, therefore, be selecting a less complex, less severe case-mix in order to reduce the probability of a liability claim occurrence. The variable, REFCASES, was coded 1 if the respondent answered "yes" and 0, if "no."

In order to determine the relationship between board-certification and case-mix severity, the variable, REFCASES, is used as proxy for case-mix. A model is specified as follows:

$$\begin{aligned} \text{REFCASES} = {} & \alpha_0 + \alpha_1 \text{ SPECCERT} + \alpha_2 \text{ GROUP} + \alpha_3 \text{ MEDAFF} \\ & + \alpha_4 \text{ YRSPRAC} + \alpha_5 \text{ RURAL} + \alpha_6 \text{ URBAN} \\ & + \alpha_7 \text{ GP} + \alpha_8 \text{ MEDSPEC} + \alpha_9 \text{ SURG} + \varepsilon \end{aligned}$$

where:

ε = a stochastic error term and all other variables are as defined above in Table II.

Prior expectations are that SPECCERT, GROUP, MEDAFF, and RURAL will be negatively associated with REFCASES if it is a reasonable proxy for case-mix, since physicians with these characteristics would be likely to have more severe case-mixes due to their higher training levels, easier access to colleagues, or, in the case of RURAL physicians, fewer available specialized physicians for referring more complex cases. URBAN and GP are expected to be positively related to REFCASES as physicians in URBAN areas can easily refer to specialists and GP's, as generalists, would be expected to refer complex cases to specialists. No a priori expectations are stated for the other variables included as controls.

Results of the analysis are presented in Table V. The direction of the relationship between each of the included variables and REFCASES is as predicted above, which suggests that REFCASES may act as a reasonable proxy for case-mix severity.

Of particular interest is the coefficient of SPECCERT, which is negative and highly significant ($p < .0006$). This result indicates that board-certified physicians are less likely to refuse cases, ceteris paribus. Calculation of the conditional probabilities of REFCASES, when SPECCERT takes on the values of 1 and 0, reveals substantial differences in the conditional probabilities of refusing cases:

$$[P\,(R)\ \text{SPECCERT} = 1] = 38.4\%$$

$$[P\,(R)\ \text{SPECCERT} = 0] = 44.1\%$$

$$\partial P / \partial X_1 = 5.72\%$$

Table V: Results of Logit Analysis (Maximum Likelihood Estimates). Estimation 2: Refcases

Explanatory Variables	Estimated Coefficients
CONSTANT	-0.5645** (7.0521)
SPECCERT	-0.1510** (3.4240)
GROUP	-0.15933** (3.9209)
MEDAFF	-0.0229 (0.4249)
YRSPRAC	-.0013 (0.7552)
RURAL	-.0495 (0.7008)
URBAN	0.1031* (2.3082)
GP	0.5798** (8.9243)
MEDSPEC	0.1873** (2.9973)
SURG	.41697** (7.1074)
CONDITIONAL PROBABILITY ($\bar{P}$)[a]	.4201

**Significant at the 0.01 level.

*Significant at the 0.05 level.

[a] $\bar{P}$ is the conditional probability obtained by evaluating the entire model at the sample mean. The equation used to compute $\bar{P}$ is:

$$1/1+e^{-t}, \quad t = \sum_{i=1}^{n} b_i m_i + C$$

where b_i = coefficient of variable i, m_i = mean value of variable i, and c = constant.

To the extent that REFCASES represents an acceptable proxy for case-mix severity, findings in this section provide support for the hypothesis that board-certified physicians have a more severe or complex case-mix since these physicians report that they refuse fewer cases due to professional liability considerations.

Results in this section must, of course, be viewed with caution. The variable, REFCASES, clearly is not a perfect proxy for case-mix. It may be related to other events (e.g., CLAIM experiences) or interpreted in varying ways by respondents. Further research on case-mix as a factor affecting the probability of malpractice claim occurrence is needed before a definitive statement can be made about the relationships among board-certification, case-mix severity, and the probability of malpractice claim occurrence.

CONCLUSION

This study is an attempt to investigate the relationship between board-certification and professional liability experience including consideration of the case-mix problem. Initial examination of the relationship using four-fold contingency tables indicates the existence of a substantial positive relationship between board-certification and liability claims. A model is then specified and estimated. Results from the logit analysis indicate that board-certified physicians are more likely to incur professional liability claims than are non-board-certified physician when other characteristics of the physician and his practice are held constant. The increased risk of a claim, however, amounts to only 2.71 percent. It is likely that this increased risk may be partially attributable to several factors which could not be explicitly controlled for in this study, particularly the case-mix factor. The board-certified physician, presumably, sees more severe and complicated cases which carry a higher risk of uncertain outcome. A more severe case-mix is expected to be associated with greater risk of liability claims.

Investigation of the relationship between board-certification status and a proxy for case-mix--refusal of cases for professional liability considerations--suggests that board-certified physicians do have a more complex case-mix. These findings support the hypothesis that board-certified physicians report more liability claims because they are at greater risk due to more complex or severe case-mix.

The findings in this study should be viewed with caution, however, and are meant to provide only some preliminary indications of the nature of the relationships among board-certification status, case-mix severity and professional liability claims. Future research on this topic should include more complete specification of the model with inclusion of variables such as patient characteristics, exposure factors, legal environment, and explicit case-mix measurements.

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Table I: Physicians Reporting One or More Malpractice Claim Occurrences, by Certification Status

Certification Status	Specialty Categories							
	General/ Family Practice		Medical Specialties		Surgical Specialties		Other Specialties	
	No.	Percent[a]	No.	Percent	No.	Percent	No.	Percent
Board-Certified	196	34.2	691	24.0	1163	52.3	633	29.1
Non-Certified	827	33.7	486	22.6	366	41.3	412	22.3
Significance Level		N.S.[b]		N.S.[b]		p<.001		p<.025

Source: "Eleventh Periodic Survey of Physicians." Center for Health Services Research and Development, American Medical Association, Chicago, 1977.

[a]The percentage shown corresponds to the proportion of physicians in each specialty and certification category who responded "yes" to the question: "Have you ever had a malpractice claim filed against you?"

[b]*Not significant at the .10 level or below.

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An Examination of Evidence Concerning Continuing Competence of Physicians *by* *Ronald L. Heilmann**

INTRODUCTION

Of the many issues comprising the general category labeled quality of care, assuring the continuing competence of physicians has become one of the most controversial. This issue encompasses a broad spectrum of issues ranging from those concerning problems of dealing with alcoholism and/or drug abuse among health professionals to strategies which assure that control of the medical profession remains a function of the profession rather than being exogenously imposed by lawmakers and enforced by non-health professional bureaucrats.

A number of factors contribute to the growing public pressure for change in the present system of licensure. Among these are those arising from the consumers-rights movement; the concern for quality of care brought about by public attention to the recent malpractice crisis and disclosures concerning alcoholism and drug abuse within the profession; and the increasing importance of the federal government as a third party payer of health care costs and the commensurate accountability associated with the use of those funds. This last point looms even larger with the increasing likelihood of the implementation of some form of national health insurance.

Topics related to the continuing competence issue have been the subject of numerous articles and editorials in the professional literature as well as of studies and reports by the federal government. Federal attention to this subject dates back more than a decade. In 1967 the National Advisory Commission on Health Manpower (Report, Volume 1, pp. 41-42, 1967) raised the possibility of linking relicensure and continuing medical education (CME). During the period 1971-1977 HEW published a series of three reports on credentialing (DHEW, No. (HSM) 72-11, 1971; DHEW, No. (HRA) 74-3101, 1973; DHEW, No. (OS) 77-50057, 1977) that included specific recommendations for change. The National Commission's linking of relicensure to continuing medical education was incorporated as the sixth of seven recommendations in these reports. (DHEW, No. (HSM) 72-11, 1971, pp. 76-77; DHEW, No. (OS) 77-50057, 1977, pp. 23-24).

> The professional organizations and states are urged to incorporate a specific requirement for the assurance of a continued level of practitioners' competence as one condition in the recredentialing process....

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To elaborate on this recommendation the reports state:

> . . .Professional review organizations should be expected to make recommendations for action in continuing education; institutions, particularly those receiving Federal support, should provide equal access to continuing education programs for all health practitioners.

In 1978, a voluminous report (Legislative Drafting Research Fund, 1978) on medical disciplinary procedures in the U.S. was completed under contract with HEW. This report, a summary of which has not been generally distributed at the time this note is being written, contains eleven recommendations of which the third and fourth are of particular interest. The third recommendation deals with exploring the feasibility of restricting medical licenses and practice to the area(s) in which the physician took postgraduate training. Currently, a licensed physician is free to practice in any specialty. The fourth recommendation concerns license renewal. Renewal every four years is recommended and should be conditional upon evidence of participation in approved CME. It is further recommended that the licensing agency be authorized to order re-examinations as well as physical and/or mental examinations when evidence supports the need. Age, alcoholism and excessive drug use are cited as possible bases for some form of examination.

Clearly, the implementation of the various recommendations contained in these various government documents would drastically alter the present system of licensure. Before undertaking such a change, the need should be well documented. Impetus for offering this addition to the continuing competence literature rests upon the observation of this author that much of the past literature seems to begin with the premise of a need for change. Evidence is often indirect. For example, in the hearings preceding passage of the Health Professions Educational Assistance Act of 1976 (P.L. 94-484), Senator Edward Kennedy, as chairman of the U.S. Senate's Subcommittee on Health of the Committee on Labor and Public Welfare, introduced a session (Hearings, pp. 925-926) by giving his view of the U.S.'s four major health manpower problems. One of the four was licensure. As part of the evidence of this, he referenced the then-current malpractice crisis and stated:

> . . .Only twelve physicians in the entire country lost their licenses for malfeasance or incompetence last year. Twelve of more than 300,000.

However, lack of license revocation does not necessarily imply lack of quality control. The infrequency of this occurrence under the present licensure system, sometimes referred to as life-time licensure, is not surprising given that the consequences of revocation may be perceived as an "economic death sentence" (Legislative Drafting Research Fund, 1978, p. 4). Nevertheless, the need for change does seem to be

accepted and attention has been given to the form of change such as whether CME should be voluntary or mandatory.

The objective of the research reported herein is an attempt to statistically measure whether evidence can support the contention that a physician's medical knowledge becomes obsolete over time, i.e., it addresses the problem of the aging (not necessarily aged) physician. Those citing the knowledge explosion as a reason for mandatory CME implicitly assume that, generally, physicians do not take advantage of the many CME opportunities available nor regularly read their professional journals. There is no argument with the point that the rapidly changing technology of medicine leads to the obsolescence of elements of a physician's formal education. This and the heavy demands placed on practitioners' time make it extremely difficult to keep current. Also, it is a fact of the human condition that most acquired skills tend to fade with age, especially advanced age. In either case, if the countervailing force of experience is insufficient, the result can be a physician rendering care of less than the current standard of care. In the extreme, this may constitute medical malpractice. It is this extreme case that provides the basis of this research effort.

The basic assertions of this analysis, i.e., that knowledge becomes obsolete and that skills deteriorate, are not new. Indeed, these phenomena have long been recognized as problems in the professional management literature. See, for example, the work of Siefert (1964) and Haas (1968). The common theme linking that early literature and most of the more recent literature dealing with the physician, e.g., Derbyshire (1977), is the role of education. A theoretical structure of this role is provided by the human capital literature of economics, the most comprehensive example of which is Gary Becker's book Human Capital (1964). Theoretical treatment of the obsolescence and deterioration phenomena, however, has evolved only recently. For example, Rosen (1975), in an attempt to analyze age profiles of income streams, developed a learning-by-doing model that incorporates knowledge obsolescence. In this model, investment in education is viewed as resulting in a larger stock of human capital. This basic concept is extended to incorporate depreciation of that capital stock. The rationale is that depreciation occurs due to obsolescence. Stoikov (1975) specifically relates the obsolescence and deterioration phenomena to the aging process. Thus, theoretical precedents for the basic assertions of this analysis have been established.

The contribution offered by this research is the empirical application to the career of the physician. Age, as it correlates with elapsed time out of medical school, is employed as an index of all time-related factors--obsolescence of knowledge, deterioration of skills and experience. Associations between measures of medical malpractice and the physician's age at the time of an incident leading to a malpractice claim are investigated to determine whether, in the

aggregate, physician age is a statistically significant contributing factor to the incidence of malpractice claims.

DATA

The data used for this study are taken from a HEW funded survey of insurance firms' medical malpractice claims closed in 1970. Thousands of claims were selected to be included in the sample.[1] Information from each selected claim was recorded and ultimately stored on computer tape to facilitate analysis. A public use version of the tape became available to the research community late in 1975.

Information recorded includes data on the attributes of the incident, the settlement and the physician. For purposes of this analysis, the following incident and settlement data are used as measures to complement the simple rate of occurrence in an effort to more comprehensively evaluate any observed association between a physician's age and an incident leading to a malpractice claim:

1) the existence, or lack thereof, of a causal link between the physician's negligence and the patient's injury;
2) whether the alleged malpractice consisted of maltreatment or misdiagnosis;
3) the severity of the claimed injury; and
4) whether settlement of the claim involved payment to the claimant.

In addition to age, the physician attributes considered are:

1) specialty;
2) board certification;
3) sex;
4) place of education;
5) type of practice; and
6) location of practice.

Tables I and II elaborate on the definitions of these data.

It is recognized that these data portray the situation of nearly ten years ago in a profession functioning in a rapidly changing environment. However, the continuing competence controversy remains current and these data provide the only publicly available basis for the analysis reported. It should be pointed out that HEW has funded a survey of claims closed in 1976. Although completed early in 1978, a public use version of the computer tape has not been made available to the research community as of the time this is being

[1] An expanded sample of 3,685 incidents provides the basis of the empirical analysis presented in this paper.

Table I: Malpractice Measures Used in Hypotheses Evaluation

Description	Unit of Measure	
1) Causal link	Two categories:	Yes No
2) Type of malpractice	Two categories:	Malpractice Misdiagnosis
3) Severity of injury	Four categories:	Insignificant Temporary Permanent Death
4) Settlement	Type categories:	Pay claimant Not pay claimant

Table II: Physician Attributes Used in Hypotheses Evaluation

Description		Unit of Measure	
1) Specialty	Five categories:	Very low Low Medium High Very High	actuarial risk level
2) Board certification	Two categories:	Yes No	
3) Sex	Two categories:	Male Female	
4) Place of education	Two categories:	Foreign United States or Canada	
5) Type of practice	Five categories:	Private Partnership Group Institution Industrial and other	
6) Location of practice	Two categories:	Urban Rural	
7) Location of practice (state)	Three categories:	Low Medium High	Litigiousness of state

written (February, 1979). It is not known when the 1976 data will be made available; therefore, the analysis offered is based on 1970 data only.

HYPOTHESES TESTED

For purposes of statistical analysis the association to be investigated is stated as a null hypothesis. In its basic form the null hypothesis is:

> There is no difference in the rate of occurrence of malpractice claims against physicians among the age categories of those physicians.

Two definitions are necessary to clarify this hypothesis. First, the physician's age is defined as age at the time of the incident. Second, age categories are defined as:

1) less than 35;
2) 35-44;
3) 45-54;
4) 55-65;
5) 65 or greater.

Although arbitrary, these categories correspond to those frequently employed to present age-related data and were used by those who collected the original data upon which the empirical component of this research effort is based.

A total of five null hypotheses of no difference are constructed. In addition to the basic hypothesis stated above, four are stated in terms of the incident and settlement data listed in the DATA section of this paper. Specifically, the malpractice measures of causal link, maltreatment versus misdiagnosis, injury severity, and pay versus no pay are employed as performance criteria with which to evaluate the subpopulation of physicians involved in malpractice claims. This approach parallels that used previously (Heilmann, 1978) as a means of investigating an observed association in greater depth. Thus, the conclusions reached are based on the cumulative information obtained from testing all five hypotheses.

The basic hypothesis can be evaluated by a simple comparison of the age distribution of the physicians involved in malpractice claims with the age distribution of the entire (1970) physician population. This comparison involves aggregate data only. Such is not the case for the remaining hypotheses. Appropriate statistical testing of the additional hypotheses involving incident and settlement attributes requires formulation of models capable of dealing with the discrete nature of the dependent variables, the simultaneous effects of several factors and consideration of each incident in the sample individually.

The latter characteristics permit statistical isolation of the effect of age. Specifically, the physician attributes listed in the DATA section of this paper are treated as supplemental factors in the age/malpractice associations investigated. Previous research reported in the professional medical literature has shown these factors to have some association with the rate of occurrence of malpractice claims; therefore, the need to separate those influences from age is clear. The statistical technique used to accomplish the tests of the hypotheses is logit.[2]

Logit analysis is a nonlinear form of regression with the dependent variable consisting of a probability distribution indicating the likelihood that an observation characterized by specific values of a set of attributes is from one of two or more identifiable subpopulations, e.g., pay versus no pay. This technique has been developed to deal with a dependent dichotomy because constraining ordinary multiple regression to a finite range, e.g., zero through one, as a means of treating a discrete dependent variable violates the basic assumption of homoscedastic disturbances.

Regardless of the technique used to evaluate or test a hypothesis, interpretation of the result is the same. Statistical rejection of a hypothesis of no difference implies that some difference may exist and the direction of difference indicates whether a given age group of

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[2]The term logit refers to a group of statistical techniques within the regression family. The logit model used in this research is of the form:

$$P_{ij} = P(y_i = a_j) = \frac{\exp(x_1' b_j)}{\sum_{k=1}^{G} \exp(x_i' b_k)}$$

subject to $\sum_{k=1}^{G} b_k = 0$

P_{ij} = probability that the ith observation takes the jth of G possible values, a_j, of the malpractice related measures y_i.

b_j = vector of coefficients of the jth linear function of the vector of explanatory variables or factors, x, constructed from the ith observation.

b_k = same definition as above for all G functions constructed.

This model produces G logit equations, i.e., one for each discrete value of the dependent variable in the original data. The G probabilities calculated sum to one with the maximum probability defining the category of membership for a given observation.

the physicians involved in malpractice claims in 1970 is overrepresented or underrepresented.

EMPIRICAL RESULTS

Table III contains a summary of the aggregate data used to evaluate the basic hypothesis. The results presented therein show no unequivocal general tendencies. For example, the two age groups that are underrepresented in the subpopulation of physicians involved in malpractice claims are the youngest (less than 35) and the oldest (65 or greater). Also, the highest level of involvement occurred for the 35-44 age group; the highest rate of involvement occurred for the 45-54 age group; and the greatest likelihood of involvement in a claim resulting in payment to the claimant occurred for the 55-64 age group.

Comparing the first two columns of Table III indicates that the two age distributions of interest are not the same. One method of measuring the sameness, or lack thereof, is to compute the correlation between the two distributions. This results in a low coefficient of determination (r^2) of approximately .33; i.e., the age distribution of physicians involved in malpractice claims can explain only approximately 1/3 of the variation (or pattern) of the age distribution of the 1970 population of physicians. Although this test does not offer a defined statistical means of accepting or rejecting the basic hypothesis, the result obtained does permit a subjective statement of rejection of the hypothesis of no difference. This means the author accepts a statement that, based on the aggregate data, it is likely that the two age distributions are substantially different. Further conclusions are presented after the analysis of the other four hypotheses.

The models formulated to test the other four hypotheses all have an identical structure in that each expresses the previously identified malpractice measures as a linear function of the physician attributes. For purposes of this analysis, the five physician age categories are represented by a set of four binary variables (dummy variables in the vernacular of statistics).[3] Although the four variables as a set can represent all five age categories, specific statements concerning the statistical significance of the association of an age group with a malpractice measure are restricted to four age categories. The age category selected to be the omitted group is the "Less than 35" category.

Table IV contains a summary of the results obtained from the logit analysis of the models formulated to test the second through the fifth hypotheses. Interpretation of the results presented are most easily viewed as the responses to two questions for each combination of age category and malpractice measure in the table.

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[3] A dummy variable can take on only two values, 0 or 1, and is thus used to represent the absence or presence of a particular attribute.

Table III: Summary of Aggregate Statistics on Physician Age and Involvement in Malpractice Claims Closed: 1970

Age Group	Physician Population (%)	Physicians Involved in Malpractice Claims (est.)(%)	Rate of Involvement	Percent of Claims Settled With Payment
Less than 35	84,527 (25.3)	1,022 (11.3)	1.21%	45.9%
35-44	85,042 (25.5)	3,156 (34.8)	3.71%	45.6%
45-54	71,770 (21.5)	2,679 (29.6)	3.73%	50.0%
55-64	51,458 (15.4)	1,605 (17.7)	3.12%	57.1%
65 or Greater	41,231 (12.3)	595 (6.6)	1.44%	54.7%
Total	334,028 (100.0)	9,057 (100.0)	2.71%	49.6%

Source: J. N. Haug and B. C. Martin, Foreign Medical Graduates in the United States 1970, Chicago: American Medical Association (1971), Table K, p. 21; and author's calculations based on data from the Secretary's Commission on Medical Malpractice public use computer tape.

Question 1) Is the association between this age category and this malpractice measure statistically significant at the 1% level?

Question 2) Is the number of physicians (in the sample) in this age category/malpractice measure combination disproportionately high or low?

The response to the first question is recorded as "Yes" or "No" supported by a t-statistic in parentheses. The response to the second question is recorded as "Over" if the data show the number of physicians in the age category/malpractice measure combination to be disproportionately high. This conveys that the age category is overrepresented in terms of the malpractice measure. "Under" conveys the opposite situation.

Another interpretive clarification is necessary for the results presented for Hypotheses 2, 3, and 5. For each result, the malpractice measure has two possible states but only one is specified in Table IV. Use of a two-category classification scheme necessarily results in each being a mirror image of the other; i.e., the significance is the same and the direction of association is reversed.

A brief review of the results presented in Table IV reveals some interesting situations. Hypothesis 2 results show that both the "55-64" and "65 or Greater" categories are overrepresented to a significant extent with the finding of a causal link between physician negligence and injury to a patient. The pattern observed indicates a direct relationship between age and an increasing (proportionately) incidence of a causal link.

Hypothesis 3 results show the "55-64" and "35-44" categories to be significantly underrepresented with the allegation of maltreatment, i.e., the tendency is toward misdiagnosis. There is no clear pattern, however, permitting a generalization as with Hypothesis 2.

Interpretation of the results of tests involving multiple-category-hypotheses such as Hypothesis 4 is more difficult. A complete analysis requires reviewing tendencies within both sets of measures. Analysis of Hypotheses 2 and 3 is necessarily limited to changes across age categories for a specific malpractice measure. Although this remains of interest for Hypothesis 4, it is probably of greater interest to evaluate changes within an age category across malpractice measures.

Several associations shown in Table IV are of interest. For example, within the "35-44" age group there is significant underrepresentation in claims alleging insignificant injury and significant overrepresentation in the death category. Both the "45-54" and "55-64" age groups show significant underrepresentation in the temporary injury category and significant overrepresentation in the death category. Only the "65 or Greater" group shows no significant associations. In contrast, only the death category shows three significant

Table IV: Summary of Test Results for Hypotheses Two Through Five

Hypothesis/ Malpractice Measure	Significance[a] (t) and Direction[b] of Association Age Category			
	65 or Greater	55-64	45-54	35-44
Hypothesis 2 Causal Link	Yes (3.82) Over	Yes (3.31) Over	No (0.49) Under	No (0.45) Under
Hypothesis 3 Maltreatment	No (0.72) Over	Yes (3.84) Under	No (2.44) Over	Yes (3.04) Under
Hypothesis 4 Insignificant	No (1.20) Under	No (0.33) Over	No (0.68) Over	Yes (2.92) Under
Temporary	No (0.13) Over	Yes (2.73) Under	Yes (4.82) Under	No (1.26) Over
Permanent	No (1.87) Over	No (1.49) Under	No (1.13) Over	No (0.85) Under
Death	No (0.20) Under	Yes (3.00) Over	Yes (3.38) Over	Yes (3.86) Over
Hypothesis 5 Pay	No (1.29) Over	Yes (3.21) Over	No (1.06) Over	No (0.18) Under

[a]A two-tailed significance test is used: $t_{.995} = 2.58$

[b]Direction of association is defined as the overrepresentation or underrepresentation of the physicians in a specified combination of age category and malpractice measure.

associations (all "Over") but the significance declines as the age groups increase. This constitutes the only trend-type-pattern discernible in the results.

The results for Hypothesis 5 show the only significant association to be an overrepresentation of the "55-64" age category. This is consistent with the fourth column of Table III that shows the "55-64" age category as having the highest likelihood of settling a claim with payment to the claimant.

CONCLUSIONS

As indicated at the outset, the objective of this research has been to determine whether physician age is significantly associated with the incidence of malpractice. Within this context, malpractice has been viewed as the extreme case of the obsolescence of knowledge and deterioration of skills over time.

Several conclusions can be drawn from the results presented in the previous section. First, the aggregate data (Table III) established that the age distribution of those physicians involved in malpractice claims closed in 1970 differed substantially from that of the 1970 population of physicians. The rate of involvement peaks with the "45-54" age group and settlements involving payment to the claimant peaks with the "55-64" age group. This suggests some tendency toward a disproportionate involvement of older physicians. However, the results shown cannot support any conclusion with respect to the central issue being addressed.

Recall that the results presented in Table IV relate only to the subpopulation of physicians involved in malpractice claims closed in 1970. By definition, the results for Hypothesis 2 are the most relevant to the central issue. The increasing significance with increasing age of the finding of a causal link supporting the claimant's allegation suggests that knowledge may become obsolete and skills fade over time. However, the results for Hypotheses 3, 4, and 5 are more difficult to interpret but appear to offer little substantiation for the Hypothesis 2 result. Hypothesis 3 simply categorizes the type of malpractice. No age category is shown to be significantly overrepresented with respect to maltreatment but the "35-44" and "55-64" age groups are shown to be significantly overrepresented with respect to misdiagnosis. The Hypothesis 4 results are quite mixed. The decreasing significance of the age categories within the death category constitutes evidence of a decreasing likelihood of a serious misadventure with increasing age. In contrast, the overall pattern of associations could be considered supportive of the obsolescence of knowledge and deterioration of skills theory because the three significant associations shown for the insignificant and temporary injury categories indicate underrepresentations while the only significant associations with the death category are indicative of overrepresentations. Hypothesis 5 results verify the aggregate data measure

with the showing of a significant overrepresentation of the "55-64" age category with settlements requiring payment, but no conclusion can be drawn with respect to the central issue being investigated.

In drawing a final conclusion, it must be recognized that only the extreme case is dealt with in this analysis. Considering that point and the results of the analysis summarized above, it can be concluded that support, albeit weak, is found for the theories that knowledge becomes obsolete and skills deteriorate over time. Although this support is not strong, it is at least suggestive that the medical profession should be giving some attention to alleviating these problems in a manner which will bring about widespread participation in whatever programs are devised.

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Collective Bargaining in the Health Care Industry *by Mario F. Bognanno and Frederic Champlin**

INTRODUCTION

The health care industry is important not only because it provides vital services but also because of its size and growth rate. Because of the importance of this sector, we are presented with significant questions of social policy concerning not only the equitable distribution of these services to the members of society but also distribution at a reasonable price to both the individual and society. Apart from these policy issues, however, is the significance of the health care industry as an economic unit. In fiscal 1976, this industry -- all health care expenses -- accounted for 8.6 percent of total Gross National Product in the United States and employed nearly five million people, or about 30 percent of all service workers (Tanner, et al., 1977, p.3).

It is from this context that collective bargaining in this industry takes its importance. The outcomes of collective bargaining activities affect both the allocation and the costs of health care services. Therefore, it may have an important impact on the policy issues mentioned above. Furthermore, collective bargaining in the health care industry, through its impact on costs, may have an effect on price levels in the economy as a whole. Thus, this process may have an important bearing on a wide variety of policy issues.

The plan of this paper is first to discuss the impact of collective bargaining on the health care industry. This includes a discussion of the implications of collective bargaining for relative wages, employment levels, the occurrence of disputes and work stoppages, and the impact of collective bargaining on hospital costs. Also considered are the effects of health care regulations on collectively bargained wages. The paper will end with a discussion of policy questions raised by the 1974 Health Care Amendments.

COLLECTIVE BARGAINING IN THE HEALTH CARE INDUSTRY

In discussing the extent of collective bargaining in the health care industry, a number of issues are considered. One is the trend of unionization: is the organized sector expanding, contracting, or remaining the same? Also investigated is the relative importance of various occupations and unions. Finally, both the characteristics of

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employers with contracts and the characteristics of the agreements they reach are analyzed.

If data for union membership and numbers covered by collective bargaining agreements are examined, a relatively significant union expansion in absolute terms can be seen. Federal Mediation and Conciliation Service data indicate that the three largest private health care industry unions, in terms of numbers of bargaining unit employees and numbers of contracts, are the Service Employees International Union, the National Union of Hospital and Health Care Employees (a division of the Retail, Wholesale, and Department Store Union), and the American Nurses Association (Tanner, et al., 1977, p. 69). Table I presents union membership data for the health care industry by selected years. These data indicate fairly substantial rates of growth for the three organizations. Thus, the number of workers represented by these unions is increasing rapidly and there is reason to believe that, in general, the unionization rate for the entire industry is on the upward trend.

Turning to the occupational composition of the organized work force, it appears that the American Nurses Association's representation has been the fastest growing with a compound annual rate after 1970 of nearly 15 percent (see Table I). Other professional groups have also been expanding their representation. Bognanno, et al., (1975) report that, in 1973, at least 16,000 physicians and dentists belonged to twenty-six organizations committed to collective bargaining. Their motivation for joining, however, appears to be somewhat different from those of more traditional employee categories: it appears they are more concerned with such socioeconomic aspects of medical and dental practice as professional autonomy, problems with third-party payers, and the problems associated with price controls (pp. 34-35). We may assume that if these problems remain salient, as indeed they appear to be, there may be continued pressure to organize among physicians and dentists even though the legal status of such organizations is being questioned.

CHARACTERISTICS OF LABOR AGREEMENTS

It has been stressed by practitioners in health care industrial relations that the industry is unique and distinct from all others. Therefore, it is interesting to discover that an examination of agreements reveals substantial similarity in the scope of bargaining between this and other industries.[1] Differences do exist, however, with respect to the depth of coverage on certain issues and with respect to specific accommodations aimed at the industry's professional workers. These

[1]See, for example, the remarks of Juris (1978) and Jerome T. Barrett in "A Discussion," Proceedings of the 1977 Annual Spring Meeting, Industrial Relations Research Association: Madison, 1978, p. 527.

Table I: Various Unions: Estimated Membership in Health Care Institutions

Year	Service Employees International Union[a]	National Union of Hospital and Health Care Employees[a] (Dist. 1199)	American Nurses[b] Association
1960	NA	NA	7,800
1968	90,000	NA	30,200
1970	125,000	50,000	40,000
1972	150,000	70,000	NA
1974	200,000	80,000	69,202
1976	250,000	80,000	--
Total Number of Employees in Bargaining Units and Number of Contracts as of December 31, 1976[c]			
Employees	156,099	98,625	66,650
Contracts	839	413	412
Compound Annual Rate of Membership Growth:			
1970 through 1976	12.2%	8.1%	14.7%[d]

Source: Lucretia Dewey Tanner, Harriet Goldberg Weinstein, and Alice Lynn Ahmuty: Impact of the 1974 Amendments to the NLRA on Collective Bargaining in the Health Care Industry, Federal Mediation and Conciliation Service. Data through 1974 from Appendix Chart 1, p. 117, for 1976, pp. 72-100.

[a]Estimated number in health field.

[b]Estimated number covered by collective bargaining agreements. Total membership is substantially larger.

[c]Source: Tanner, Weinstein, and Ahmuty, op. cit., Appendix Chart 2, p. 118. Private institutions only.

[d]Through 1974 only.

differences are not any more dramatic than those one would find in any inter-industry comparison like this.

Tanner, et al. (1977, pp. 156-157) report on the importance of various issues in negotiations as determined by the percent of all demands noted by mediators. Their results are reproduced in Table II. They indicate that economic issues (i.e., wages and pension and insurance) rank near the top while seniority and grievance procedure demands rank near the bottom. The similarities between the health care industry and all cases handled by the Federal Mediation and Conciliation Service are striking. The two most significant distinctions are in the area of seniority, which was ranked somewhat lower in the health care industry, and union security, which was ranked considerably higher. It appears that, in general, bargainers in the health care industry are pressing for demands similar to those of their counterparts in other industries.

A survey by the American Hospital Association of the provisions of a sample of 817 hospital contracts provides information about the results of bargaining. As has already been noted, the similarities between these agreements and those in industry generally are much more important than the differences. Some differences exist, however. One distinction noted by Juris (1978) is that hospital agreements tend to be of shorter duration than those in industry as a whole. He finds that over 70 percent are for two years or less. This finding has also been supported by Federal Mediation and Conciliation Service data, which indicate that 76 percent of the contracts referenced in their reports are for a period of less than thirty months. This compares with 45 percent of all their cases (excluding the health care industry). As expected with shorter contract durations, health care agreements have proportionately fewer cost-of-living allowance clauses, deferred-wage-increase clauses, and proportionately more wage reopener provisions.

Another distinction noted by Juris is in the prevalence of union shop provisions. These provisions are found in only 30 percent of his contract sample as compared to 63 percent of his "all industry" comparison data.[2] Seniority as the sole or deciding factor in promotions is mentioned in 17 percent of the hospital contracts as opposed to 38 percent of the "all industry" sample. Juris notes little difference in discipline provisions and finds that arbitration is the terminal step of the grievance procedure in 88 percent of the hospital contracts as opposed to 96 percent of the "all industry" sample. In the area of union and individual security, then, some distinctions appear between hospital and other industry contracts. In terms of benefits, Juris (p. 509) reports that hospitals lag behind the "all industry" sample in both the number of holidays and the pay rate for holiday work. However,

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[2]Comparison data from Bureau of National Affairs, Basic Patterns in Union Contracts, 8th ed., Washington, May, 1975. See Juris, (1978, f.n. 3).

this is at least partially offset by other paid time-off benefits, including personal days and sick leave but excluding vacation.

We may conclude this section by restating the previous conclusion: the distinctions between collective bargaining negotiations and agreements in the health care and other industries are more notable by their absence than by their presence. Those distinctions which are noted may be more the result of the relative youth of collective bargaining in the health care industry and/or the relatively transitory economic conditions under which this industry has recently operated (e.g., rapid growth in output and wage-price controls) rather than inherent qualities of the industry itself. Such inherent qualities which do affect contract provisions (e.g., the necessity of 24-hour staffing and the prevalence of professional employee categories) are hardly unique to this industry.

IMPACT OF COLLECTIVE BARGAINING

Relative Wages

The impact of unions on wages has been a source of perennial concern for those monitoring inflation in the health care industry. Researchers who have studied this relationship have attempted to relate increments in wages to some measure of union coverage.[3] In some cases, the estimated relation measures changes in wage levels in money values to unionization, and in others, the relation measures changes in wages due to unionization relative to the wages prevailing in a non-union situation. Results of four studies which have investigated union impact on relative wages for various occupational subgroups will be examined. Turning first to professionals in hospitals, we look at two studies dealing with the impact of collective bargaining by hospital-registered nurses.

Link and Landon (1975) examine the relationships of unionization to the beginning annual salary in 1973 of diplomaed and degreed registered nurses working in individual hospitals. They classify a hospital as "unionized" if at least 75 percent of registered nurses are union members. They also hypothesize that the effects of the "unionization" variable would be greater in states with strong non-hospital unions, a measure of the so-called "threat" effect. States were so classified if more than 30 percent of non-agricultural workers in the state are unionized. They find statistically significant[4] (at α = .05) increments in annual income related to the unionization variable and a more potent impact in states where there was a high concentration of union membership for both degreed and diplomaed nurses. In strongly unionized states, this increment amounted to about a thou-

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[3]For a full discussion of this problem, see Estenson (1978).

[4]By "statistically significant," we mean that the null hypothesis that the estimated parameter is equal to zero may be rejected at the indicated α level.

sand dollars a year for both groups. In relative terms, the Link and Landon study estimates direct union wage effects in the 4- to 7-percent neighborhood.

Estenson (1978) measures the relative impact of the extent of union coverage in a metropolitan area on the average wage of three groups of hospital employees -- registered nurses, nurses aides, and food service workers -- in both private nonprofit hospitals and public hospitals. These estimates are computed from Industry Wage Survey data prepared by the Bureau of Labor Statistics and pooled for the years 1966, 1969, 1972, and 1975. In his careful analysis, Estenson goes beyond an investigation of the size of the hospital union relative wage effect and studies variations in the union wage effect caused by conditions in the labor market, product market, community, and regulatory environments of collective bargaining in the hospital industry. He compares results from the private hospital and the state and local hospital sectors. Ignoring indirect effects, Estenson finds that registered nurses under contract enjoy a 7.3 percent wage advantage in the private sector and a 3.6 percent advantage in the public sector. Estenson's results for the private sector are statistically significant (at $\alpha = .05$).

The results of three studies which deal with non-professional employees in hospitals follow. Fottler (1977), using the same data as Estenson but disaggregated by years, examines the increase in average wages of a group of non-professional hospital employees.[5] He also compares private to state and local hospital sectors. Fottler's results indicate that a one-percent increase in unionization among these groups is associated with from $5.60 to about $7.60 per week more in wages in private hospitals and from $4.00 to about $5.60 per week more in public hospitals. Fottler's 1972 estimates may be converted from monetary values to relative wage effects. Our conversions put his union relative wage effects at from 4 to 8 percent for non-professionals.[6] Again, the results for the private sector are statistically significant (for $\alpha = .10$) while those for the public sector are not (at $\alpha = .10$).

Brian Becker (1977b), using data gathered from individual hospitals in Illinois, Minnesota, and Wisconsin, estimates the relative impact of union coverage on the wages of hospital non-professionals. Becker and his associates estimate that, for non-professionals the relative wage effect of unions is about 6.8 percent; for non-union employees in a unionized hospital the threat of unionization causes an 8.1 percent relative wage jump. For similar employees in a unionized hospital it was learned that the ratio of fringe benefits to total

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[5]Nurses aides, porters, maids, kitchen helpers, surgical technicians, and dishwashers, see Fottler (1977, p. 346).

[6]This computation is based on information in Fottler's Tables 1 and 3 and his discussion on page 352.

Table II: Comparison Between Number and Rank of Issues for Health and Non-Health Bargaining

Issues	All FMCS Cases		All Health Care Cases	
	Percent of Total	Rank	Percent of Total	Rank
Wages	19.4%	1	17.7%	1
Pensions, Insurance Welfare	14.0	2	12.1	3
Duration of Contract	13.1	3	12.6	2
Vacations, Holidays	12.4	4	11.9	4
Hours & Oyertime	6.6	5	7.4	5
Job Classification	5.8	6	5.4	8
Guarantees	5.6	7	5.4	9
Working Conditions	4.9	8	5.8	7
Management Prerogatives	4.7	9	5.0	10
Seniority	4.5	10	4.3	12
Grievance Procedures and Arbitration	3.8	11	4.5	11
Union Security	3.7	12	6.2	6
Other Issues	1.6	13	1.6	13
Total Number of Issues	42,485		7,160	

Source: Lucretia Dewey Tanner, Harriet Goldberg Weinstein, and Alice Lynn Ahmuty, Impact of the 1974 Amendments to the NLRA on Collective Bargaining in the Health Care Industry, Federal Mediation and Conciliation Service, 1977.

compensation is about 5 percent higher than in non-union situations and that the threat effect yields a relative differential in the ratio of approximately 2 percent.

These findings suggest that, for unionized units, the relative wage and fringe benefit impact is positive. Further, these estimates imply the existence of a "threat effect." That is, if one work group unionizes, then 1) employers will actually pay a wage "premium" to other non-union employees in hopes that their representation status will not change, and 2) employers will also bump-up fringe benefits among their non-unionized employees -- but since information on fringe benefits is less easily communicated, these adjustments are relatively smaller than the comparable union gains.

From the estimates presented above, along with data on the mean wages paid per hour and the mean fringe benefit rate reported by Becker, we estimate that among non-professionals (at least in Becker's sample) the total compensation (i.e., wages plus fringe benefits) impact from their unionization is approximately 8 percent.[7]

Finally, Estenson, in the work mentioned above, also estimates the relative wage effects of union coverage on the wages of nurses

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[7]This percentage increase was computed from the information given by Becker (1977b) as follows:

In the non-union situation fringes were about .17 of total labor costs. Since total labor costs are the sum of wages and fringes in the non-union situation, they are given by:

$$TC_N = W + (.17) \cdot TC_N$$

$$(1 - .17)\, TC_N = W$$

$$TC_N = \frac{W}{.83}$$

In the unionized situation, the wage is about 6.7 percent greater than in the non-union situation and the fringes are increased to about 18 percent of total labor costs. In this situation, we have:

$$TC_U = (1.067)W + (.18) \cdot TC_U$$

$$TC_U = \frac{(1.067)W}{.82}$$

The relative change in total costs is, then, given by:

$$\frac{TC_U}{TC_N} - 1 = \frac{(1.067) \cdot W/(.82)}{W/(.83)} - 1$$

$$= \frac{(.83)(1.067)}{.82} - 1 = .08$$

aides and food service employees in hospitals. Among private hospitals, he finds a 17.2 and 24 percent relative wage advantage for unionized employees working as aides and food service employees, respectively. In the public sector, the results indicate an impact of 17.1 percent for nurses aides and -2.4 percent for food service employees. With the exception of the results for food service employees, all these coefficients are statistically significant (for $\alpha = .01$).

These results may be summarized as follows: the impact of unions on relative wages appears to be greater in private hospitals than in public hospitals and in non-professional as opposed to professional occupations. In all cases, it appears that the cost impact of such union-related increments in wages can be significant.

Employment

The effect of collective bargaining on employment may be thought of in at least two ways. One is the response in total employment (i.e., demand) as a result of unionization. Another is the effect of union representation on turnover rates within organized groups. During the legislative hearings dealing with the 1974 Health Care Amendments, testimony was offered indicating that unionization would result in reduced labor turnover -- a matter of significant cost savings. We will review this aspect in a subsequent section dealing with the impact of collective bargaining on total costs.

Sloan and Elnicki (1978) estimate the effects of a number of determinants of registered nurse staffing levels in hospitals. The basic data for this study originated with a survey of Hospital Directors of Nursing conducted in 1973. The authors obtain data for "slightly over 500 hospitals" (p. 35). From these data, they estimate the relative effect of the presence of a collective bargaining agreement covering registered nurses on the number of nurses employed per hospital bed as well as total registered nurse employment. The authors were unable to find an important direct effect of union organization on staffing levels of registered nurses. However, assuming a competitive market for RN services, they offer an estimate of the elasticity of nurse staffing levels per bed with respect to the real monthly salary of new diploma RN's working full time. Their estimate, although missing statistical significance at the 5 percent level, is -.241. Thus, a 10-percent increase in wages may result in a 2.41 percent decline in nurse staffing per bed. Although this implies that the demand for nursing services is relatively inelastic, it also provides evidence that hospitals are cost conscious. Sloan and Elnicki also estimate the cross-elasticities of total registered nurse staffing levels with respect to the compensation levels of licenced practical nurses and aides-orderlies as well as cross-elasticity of total RN employment with respect to the compensation level of clerks and service employees. They find the cross-elasticity of RN total employment with respect to LPN and aide-orderly compensation levels to range between .247 and .260 and the cross-elasticity with respect to clerks and service employees to

range between .280 and .416. The cross-elasticities of registered nurse staffing level per hospital bed with respect to LPN and aide-orderly compensation estimated in one equation is .211 and in another is .265. The same elasticity with respect to clerical and service employee compensation levels is .425 and .587, respectively.

The estimates suggest, then, that any relative success organized nurses have in raising their compensation levels through collective bargaining may result in reduced employment levels. This tendency, however, may well be offset in the event that organized licensed practical nurses, aides-orderlies, and clerical and service employees win relative adjustments in wages which are equal to or greater than those negotiated by RN's. It appears that the positive cross-elasticity estimates are larger than the nurses' own negative wage elasticity estimate. This information, combined with the fact that the unionized non-professional occupations are more successful in raising their relative wages, indicates the strong possibility that any increased general levels of organization in hospitals may result in an increased demand for registered nurses due to a substitution in production away from non-professional workers, ceteris paribus. This finding may be considered tentative, at best, inasmuch as many of the underlying elasticity estimates miss statistical significance and are likely candidates for bias.[8]

Work Stoppages and Disputes

Using Federal Mediation and Conciliation Service data, work stoppages and disputes in the health care industry, for the period August 25, 1974, through December 31, 1976, are examined. These data represent a complete count of all 2,585 private health care industry negotiations which occurred during this period.

The Federal Mediation and Conciliation Service is required to mediate all disputed cases in the health care industry. This does not, however, mean that mediators hold meetings with the parties in every case. In those cases where negotiations appear to be progressing satisfactorily, mediator contact may be limited to telephone calls. The relevant measure of the number of disputes, then, is not the number of mediation cases but the number of "joint meetings" —where a mediation session is held with both parties present (Tanner, et al., 1977, p. 160).

According to Tanner, et al., active mediation took place in about one half of all negotiation episodes. The average number of "joint meetings" per mediation case for the private health care industry was 3.1 during this two-and-one-half year period. The comparable number for all industries in fiscal 1976 was 3.0, indicating a somewhat higher average for the health care industry. Since the Service is required to

[8]Of these eleven elasticity estimates only four (i.e., four of the five estimates for clerical and service employees) were statistically significant (for $\alpha = .05$).

mediate any case not resolved sixty days prior to contract expiration or reopening date, it would appear that this greater average number of meetings is not all that significant. Comparing the average number of joint sessions in cases where strikes occurred, we find that, in the private health care industry for the period at hand, the number was 7.1, while for all Federal Mediation and Conciliation Service cases in fiscal 1976 this number was 5.2. This is interpreted as evidence of a greater relative intensity of dispute, which may result from a deeper intransigence and/or less bargaining savvy on the part of the parties because of inexperience.

The purpose of the 1974 Health Care Amendments was to encourage both collective bargaining and the peaceful resolution of labor disputes in the health care industry. Thus, an examination of strike measures will help determine whether the Congressional purpose has been met. Three aspects of industry strike activity will be examined: frequency, duration, and breadth -- the number of workers involved.

Table III gives data on work stoppages in the medical and other health service industries. These data indicate an increasing trend in strike frequency. This increase since 1974 cannot be solely attributed to the amendments, because, to some extent, these observations lie on a trend line which predates the amendments. However, during this period, the number of representation elections did increase as did the number of certified units and organized workers. These newer units are particularly prone to reaching an impasse.

During the reference period, the Federal Mediation and Conciliation Service logged 129 private health care industry strikes. This figure represents about 5 percent of the total of industry negotiations. Tanner, et al. (1977, p. 381), concludes that the health care industry compares favorably with nationwide experience in this regard. They point out that this rate is artificially low relative to all other Federal Mediation and Conciliation Service rates because all disputes are included in the health care case load data while this is not true of other industries (p. 358). Examination of the first two years' experience reveals some tendency for disputes to become more frequent. During the year ending August 31, 1975, strikes occurred in 4.4 percent of all bargaining situations, while for the period September 1, 1975, to December 31, 1976, they occurred in 5.3 percent of the cases.

Tanner, et al., also found (p. 360) that the incidence of strikes is greater when negotiations are over first contracts rather than renewals (6.2 percent of all negotiations versus 3.6 percent) and that nursing homes account for a disproportionately large share of strikes (about one-fourth of all cases, but about one-third of all stoppages). There is also evidence (p. 361) that nursing home disputes last longer (an average of 52 days as compared to 18 days for hospitals and related facilities).

Table III: Work Stoppages in Medical and Other Health Services (Private Sector Only)

Stoppage Beginning in Year	Number	Workers Involved	Days Idle
1967	27	1,550	71,400
1968	28	6,000	59,500
1969	43	5,900	84,000
1970	49	6,000	102,400
1971	36	3,700	46,900
1972	47	9,100	116,600
1973	56	43,300	336,200
1974	44	14,300	263,700
1975	63	11,300	197,500
1976	71	49,500	609,400

Note: Roughly 40% of all work stoppages reflected in the BLS figures occur during the term of a contract and are not directly the result of negotiations.

Source: Lucretia Dewey Tanner, Harriet Goldberg Weinstein, and Alice Lynn Ahmuty, Impact of the 1974 Amendments to the NLRA on Collective Bargaining in the Health Care Industry, Federal Mediation and Conciliation Service, 1977.

Although the evidence is preliminary, it appears that the frequency of strikes and work stoppages in the health care industry is increasing. The pace of new organizing may explain much of this increase, however. First, the incidence of strikes is greater in new contract negotiations than in renewal negotiations. Tanner, et al. (1977, p. 360), report that strikes occurred in 6.2 percent of initial negotiations as opposed to 3.6 percent of negotiations over contract renewals. Acceleration of unionization would then lead to at least a temporary increase in strike frequency on this count. Second, as more establishments are organized, those remaining may be relatively more difficult to organize. These present the potential for both organizational shifts towards nursing homes and similar institutions (as one might expect when the larger and more visible hospitals are organized), and an increase in strike frequency. If this analysis is correct, then we should expect the level of disputes to increase when organizing is taking place but to level off near the all industry rate once the organizational activity has run its course.

Using the Bureau of Labor Statistics definition, Tanner, et al., has computed the weighted mean duration of private health care industry strikes. For the reference period, it is 18.1 days.[9] This rate, however, is substantially reduced by the inclusion of a short (11 day) strike involving about 40,000 workers in New York. Excluding this one strike, the weighted mean length is twenty-seven days, which is comparable to that reported by the Bureau of Labor Statistics for all industries (Tanner, et al., 1977, p. 362). Table IV reports the distribution of strikes by duration in days for the total reference period and for two subdivisions of this period. Approximately 50 percent of all strikes in the reference period are thirty days or longer. However, only about 34 percent are this length in the year ending September, 1975, while almost 57 percent are this length in the period from September, 1975 to December, 1976. The conclusion that strikes have lengthened during the latter period can hardly be avoided. It appears that factors similar to those accounting for the increase in frequency are behind this trend.

A final dimension of strikes is their breadth, or the number of workers involved. Table V presents a distribution of "bargaining situations," strikes, and strike incidence by number of workers involved. The average number of workers per strike is 558. However, when the above-referenced New York strike is excluded, this average drops to 248 (Tanner, et al., 1977, p. 365). It is clear from Table V that strikes tend to occur in larger units. This is true even though for very large units the cell frequently is hardly great enough to provide reliable estimates.

A review of these measures does not indicate cause for alarm. It does not appear that, overall, strikes in the health care industry

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[9]In the weighted average, each strike is weighted by the number of workers involved. See Tanner, Weinstein, and Ahmuty (1977, p. 361).

Table IV: Work Stoppages by Duration (Private Sector Only)

Duration of Strikes in Days	Total	% Change in Strike Duration 9/1/74 - 9/75	9/1/75 - 12/31/76
1 day	1.6	2.4	1.1
2 to 3 days	6.2	12.2	4.5
4 to 6 days	8.5	9.8	8.0
7 to 14 days	17.5	26.8	14.8
15 to 29 days	15.5	17.1	14.8
30 to 59 days	17.8	19.5	17.0
60 to 89 days	14.7	4.9	19.3
90 days and over	17.1	9.8	20.5
Total	100.0	100.0	100.0

Note: Due to rounding, totals may not equal 100.

Source: Lucretia Dewey Tanner, Harriet Goldberg Weinstein, and Alice Lynn Ahmuty, Impact of the 1974 Amendments to the NLRA on Collective Bargaining in the Health Care Industry, Federal Mediation and Conciliation Service, 1977.

Table V: Distribution of Workers Involved in Health Care Bargaining and Strikes (Private Sector Only)

Number of Workers Involved	All Bargaining Situations	Strikes	Percent of Strikes to Cases
10,000 or more	2	1	50.0%
5,000 - 9,000 (sic)	3	-	0
2,000 - 4,999	14	4	29.0
1,000 - 1,999	24	2	8.0
500 - 999	42	4	10.0
200 - 499	271	22	8.0
100 - 199	438	26	6.0
51 - 99	588	31	5.0
21 - 50	725	31	4.0
20 or more (sic)	479	6	1.0
TOTAL	2,586	129	5.0

Note: It should be noted that duplication occurs. In some instances a number of institutions bargaining with a single union or a single institution bargaining with several unions were consolidated into a single bargaining case.

Source: Lucretia Dewey Tanner, Harriet Goldberg Weinstein, and Alice Lynn Ahmuty, Impact of the 1974 Amendments to the NLRA on Collective Bargaining in the Health Care Industry, Federal Mediation and Conciliation Service, 1977.

present a greater problem in terms of their frequency, duration, or breadth than do strikes in other industries. It is also likely that there is a bulge in these indices due to the effects of new organizing. Once the industry finds a stable pattern of unionization, more typical readings may prevail. It is probable that the number of workers involved, i.e., unit size, may tend to decrease as new organization efforts are concentrated in smaller units, particularly nursing homes. This may bode ill for strike frequency data but overall impact in terms of days lost may decline. Also, such disputes do not have the visibility or "emergency" nature of hospital disputes.

Tanner, et al. (1977, p. 375), also presents the results of a survey of mediators which reports the major issue involved in the strike occurring during the reference period. The results of this survey are reproduced in Table VI. They indicate that, in over 50 percent of the cases, economic issues (i.e., wages, benefits) or union security are the major strike issues. This is consistent with data already reported concerning major issues in negotiations.

These authors also tabulate the number of strikes by outcome or method of resolution (p. 373). Their results are reproduced in Table VII. Strikes end with contracts in about 80 percent of the cases for industry as a whole but in only about 63 percent of the cases in the private health care industry. This is even lower, 38.5 percent, for nursing homes. This may be due to the relative newness of collective bargaining in much of the industry, or it may be due to the relative intransigence of some employers -- particularly nursing home proprietors. Overall, these results do not present an attractive picture of the outlook for the future of collective bargaining in this industry. If the thrust of new union organization is in the direction of proprietary establishments, such as nursing homes, we may expect some stormy times ahead.

Total Costs

The rapid rise in hospital and medical care costs over the last fifteen years has been paralleled by the increased pace of unionization.[10] Naturally, this association has led to questions about the contribution of unions to this inflation. Abstracting from any consideration of the social costs of strikes and work stoppages, Brian E. Becker has conducted a research program aimed at measuring this contribution.

Becker (1977a) argues that unions impose two kinds of costs on hospital employers. One is the impact of unions on relative total compensation levels. Rather than merely looking at the impact of unions on relative wages and salaries alone, the author also investigates the impact of unions on fringe benefits (1977b). Furthermore, Becker estimates the compensation adjustments which employers

[10]Hospital costs were increasing at an annual rate of 15% in 1977. See Becker (1977a).

Table VI: Distribution of Major Strike Issues (Private Sector Only)

Major Strike Issues	No. of Times Mentioned	Percent of Total
Wages	42	28
Ability to pay, general money	31	21
Union security	18	12
Health and welfare benefits	12	8
Work rules and classifications	8	5
Union recognition	7	5
Training programs	3	2
Personality conflicts	3	2
Contracts expiration dates	3	2
Other single issues	4	3
Multiple issues	18	12
Not available	4	3
TOTAL	151	100

Source: Lucretia Dewey Tanner, Harriet Goldberg Weinstein, and Alice Lynn Ahmuty, Impact of the 1974 Amendments to the NLRA on Collective Bargaining in the Health Care Industry, Federal Mediation and Conciliation Service, 1977.

Table VII: Resolution of Strikes by Institutions (Private Sector Only)

Strike Resolution	Total	Hospitals	Nursing Homes	Other Health Care Facility
Contract negotiated	70	46	15	9
Facility bankrupt or closed	5	1	4	-
Decertification Petition filed	9	3	4	2
Workers replaced	8	1	7	-
Union walked away	10	6	4	-
Other	9	3	5	1
TOTAL	111	100	39	12

Source: Lucretia Dewey Tanner, Harriet Goldberg Weinstein, and Alice Lynn Ahmuty, Impact of the 1974 Amendments to the NLRA on Collective Bargaining in the Health Care Industry, Federal Mediation and Conciliation Service, 1977.

make solely in response to the "threat" that a given occupation or work group may otherwise organize. These effects were discussed in an earlier section.[11] The second cost deals with the administrative costs associated with the presence of the union. These costs include the expenses of grievance management, added personnel specialists, the loss of efficiency due to delays, and the imposition of costly work rules. Observing the high turnover rate among hospital employees, Becker (1978) hypothesizes that unions may have stabilizing effects on the work force which would lead to cost reductions associated with a reduction in labor turnover. We now turn to a summary of Becker's research findings.

Becker (1977a) puts aside an explicit consideration of the "spill-over" or "threat" effects of unions on patient-care costs. He directly estimates the union effects on total compensation for five separate hospital occupations. He then uses these estimates to create a average estimate of the "overall" impact of unions on total compensation. This relative compensation differential is roughly five percent. In a separate analysis, Becker (1978) finds that, relative to non-union counterparts, unionized health care workers have a 50 percent lower turnover rate.

With the above estimates on the impact of hospital unions on compensation and turnover relative to non-union situations, Becker proceeds to compute his estimate of the direct impact of unions on average cost per patient day in short-term general hospitals. To make this computation, Becker first estimates the relationship between average cost per patient day (Y) and the variable unionization (X_1, a dummy variable representing the presence of a union in the hospital); number of unions in the hospital (X_2); annual hospital turnover rate (X_3); and average total compensation per employee (X_4) among others. His estimates of these relations, their standard errors, and the corresponding sample means on each variable are shown in Table VIII.

The role of X_1 and X_2 in this analysis warrants comment. Becker introduces these variables in order to control the indirect cost effects of unions such as the cost of administering the labor agreements and others mentioned earlier. Now let us turn to the results. Hospitals with one union have an average cost per patient day of $6.42 (9.772 less 3.350 from Table VIII) more than non-union hospitals. At the mean, this finding suggests that unions cause about a 5 percent increase in indirect costs per patient day.

A manipulation of the data in Table VIII yields an estimate of the elasticity of Y with respect to X_4 (i.e., total compensation), which is approximately .26 (Becker, 1977a, p. 9). Given Becker's assertion that the overall relative compensation impact of unions is about 5 percent, we conclude that this differential will lead to a 1.30 percent jump in average costs. Combining these two effects of unions yields an

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[11] See page 107 above.

Table VIII: Becker's Average Cost Equation

Variables	Coefficient	Standard Error	Mean
Y	--	--	$ 126.72
X_1	9.772	8.91	.247
X_2	-3.350	3.04	.619
X_3	54.930	20.21	.2603
X_4	.0039	.00116	8,423.00

Source: Brian E. Becker. The Impact of Unions on Household Costs, unpublished paper, Industrial Relations Research Institute, University of Wisconsin, Madison, 1977.

increase of 6.30 percent in Y. From this estimate the cost savings effect of unions on labor turnover must be subtracted. Assuming conservatively that unionization reduces turnover by about 20 percent, we estimate that Y is reduced by approximately 2.5 percent. Thus, subtracting this cost reduction effect from the earlier cost increase effect yields a combined union impact on relative average cost per patient day of about 3.80 percent. Under different assumptions about the turnover rate effect of unions, this estimate, of course, will vary. While the magnitude of the combined impact of unionization on relative average cost may not be overwhelming, neither is it trivial. Using data in Table VIII, a three- to five-percent addition to average cost per patient day increases these costs by about $3.80 to $6.30. Comparable estimates for nursing homes and other health care facilities are not available.

Four areas of impact of collective bargaining on the health care industry have been discussed: relative wages, employment levels, labor disputes, and total costs. In summary, it has been shown that the presence of a union in an organization has an upward influence on the wages of both unionized and non-unionized employees. This effect ranges from 4 to 17 percent for union members and is about 8 percent for non-members. Also, there is tentative evidence that the employment of nurses in hospitals responds negatively to increases in nurses wages and positively to increases in the wages of aides and orderlies. Furthermore, the general magnitude of these elasticities is such that an increase in the demand for nurses may result from increased general levels of unionism in hospitals.

The evidence of the frequency and impact of labor disputes in the health care industry indicates a possible bulge in the number of disputes associated with efforts to organize new units. Also, as bargaining units decrease in size, an increase in the number of disputes, but a decrease in the total number of people involved and days lost, can be expected. Finally, it has been shown that unionism is associated with significant but not overwhelming increases in cost per patient day in hospitals. This cost increase is partially offset by savings resulting from a stabilization of the work force associated with unionism.

EFFECTS OF REGULATION ON COLLECTIVE BARGAINING

Up to now, the institutional structure and growth of collective bargaining as it affects various aspects of the health care industry have been considered. Now a peculiar institutional feature of the industry which impacts on collective bargaining will be examined. This feature is the rise in regulation of the health care industry. Already mentioned has been the rapid rise in costs to which this industry has been subjected. This cost inflation has generated pressure from the public and from those third parties which face their immediate impact — i.e., insurers, prepayment plans, and public agencies — to keep costs in line. One obvious target for this pressure is labor negotiations.

Sloan and Elnicki (1978, p. 43-44) argue that the two most important regulatory mechanisms of recent years are certificate of need laws and prospective reimbursements. The certificate of need approach permits a local regulatory agency to restrict capital investments by hospitals to those deemed necessary. The intent seems to be to control the proliferation of high unit cost inputs. Sloan and Elnicki cite work which indicates that hospitals have tended to substitute unregulated for regulated assets under these conditions and they argue that a similar effect may prevail for labor inputs.

The prospective reimbursement system pays hospitals according to a schedule of rates determined in advance of the period to which they apply. These schedules are subject to periodic revision. In fiscal 1976, 26.5 percent of total personal health care expenditures were paid by private carriers. Government sources during this same year accounted for 40.2 percent of total personal health care expenditures. Third-party payments, then, accounted for at least two-thirds of total payments for personal health care and over 90 percent of payments for hospital care.[12] It appears obvious that with or without compulsory prospective reimbursement programs, third-party payers will have a strong impact on health care administration at all levels. It is this impact in the area of collective bargaining which we want to examine more closely.

Two competing hypotheses about the effects of third-party payers may be advanced. The first argues that the willingness of third party payers to maintain the financial integrity of health care institutions in effect reduces the demand elasticity of their services and therefore makes management concession easier to obtain (Estenson, 1978, pp. 120-121). This argument contains the implicit assumption that the presence of third-party payers does have this effect on the elasticity. The competing hypothesis is that the presence of third party payers raises the ability-to-pay issue in negotiations and effectively removes from management -- the negotiating party -- authority and responsibility for economic concessions. If this is the case and if these third parties are themselves insulated from the bargaining process, we should expect the presence of third-party payers to have a negative effect on compensation and negotiated settlements.

Empirical work tends to support this second view. Sloan and Elnicki (1978, p. 76), in the wage equation discussed above, include an indicator variable for New York and New Jersey, the two states with the (then) broadest mandatory prospective reimbursement coverage.[13] They find a consistent and statistically significant (for $\alpha = .05$)

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[12]These data are quoted from Tanner, Weinstein, and Ahmuty (1977, pp. 386-388).

[13]The indicator equaled one if the hospital was located in New York or New Jersey and zero if located elsewhere.

negative effect on nurses' wages for these two states amounting to from five to seven percent.

Estenson (1978, pp. 120-121), in estimating the union effect on nursing wages in hospitals, includes, as an interaction term with the union coverage variables, the percent of hospital costs reimbursed by the third parties.[14] He finds a consistently negative effect on the union wage differential associated with the percent of costs reimbursed.[15] Cost reimbursement, then, adversely affects the union's ability to negotiate a wage differential above what could be obtained without a union.

In conclusion, it appears that reimbursement has a negative effect on bargained wage and fringe increases. Sloan and Elnicki (1978, p. 76) have shown that reimbursement has virtually no employment effects even though it has a clearly negative effect on wages. The implication is that reimbursement operates on wages through the bargaining process. It appears that third parties have been successful in holding back wage increases.

MANDATORY MEDIATION

A provision of the 1974 Amendments to the Labor Management Relations Act of particular interest is the mandatory mediation and the fact finding or Board of Inquiry procedure.[16] In many cases, a work stoppage would meet the statutory requirement, that is, it would ". . .substantially interrupt the delivery of health care in the locality concerned,"[17] but to appoint a fact finding board thirty days prior to contract expiration or within thirty days of receiving a notice of dispute, as the statute requires, might well interfere with the bargaining process. To resolve this problem, the Federal Mediation and

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[14]Estenson points out that there are, broadly, two reimbursement methods: reimbursement for all costs for a given service and the payment of a fixed fee for a particular service. Thus, the higher the percent of reimbursement the less the incentive to control total costs.

[15]Although a consistent negative effect was found for all but nurses aides and food service workers in the public sector, none of these estimates was significantly different from zero (for $\alpha = .05$).

[16]The Act was amended by adding a new section 213. This section provides that if the Director of the Federal Mediation and Conciliation Service finds that a labor dispute will substantially interrupt the delivery of health care in a locality he may establish an impartial Board of Inquiry (BOI) to investigate the issues and make findings of fact and recommendations for settling the dispute. The Board must issue a written report and its objective is to achieve a "prompt, peaceful, and just" resolution. The Board must report within fifteen days and the parties must maintain the status quo for an additional fifteen days after the report is issued.

[17]29 U.S.C., Section 141, at Section 213.

Conciliation Service has devised a procedure by which the parties may stipulate to fact finding at the discretion of the Federal Mediation and Conciliation Service but after the statutory authority to impose fact finding has expired (Tanner, et al., 1977, p. 222). Although the latter is technically private fact finding, it will be classified together with the statutory Boards of Inquiry for purposes of analysis. Of the 120 Boards appointed in the period August 25, 1974, to December 31, 1976, about 64 percent were for contract renewals, 7 percent were reopener disputes, and 29 percent involved initial contracts. About 70 percent of the Boards dealt with hospital disputes, about 17 percent with disputes in nursing homes, and the remainder is divided among various other health care institutions (pp. 234-235).

We shall look at the effects of the Boards of Inquiry in terms of three types of results. One of the effects is on the negotiating process itself. A second effect is the outcome of the negotiations, that is, at what stage in the process is agreement reached. A third effect is the participants' evaluations of the Board of Inquiry procedure.

There is some evidence that the existence of mediation as a possible outcome dampens negotiations and causes either one or both of the parties to delay negotiations in anticipation of a Board appointment. A survey of mediators, conducted by Tanner, et al. (1977, p. 286), indicates that this occurred in 37 percent of the cases in which a fact finding board was appointed. In some cases, then, the parties are incorporating this procedure into their bargaining strategy. There also is evidence that this tactic is used more by unions than by management. About 60 percent of the union chief negotiators in Board of Inquiry cases indicated that they wanted a Board as opposed to less than 50 percent of management chief negotiators. On the other hand, only about 37 percent of union chief negotiators said they thought management had delayed bargaining while about 45 percent of management chief negotiators indicated that the union delayed bargaining. It is arguable, then, that the fact finding procedure has, at least in some cases, had an adverse effect on the bargaining process.

Turning now to negotiation outcomes, we examine the stage at which Board of Inquiry cases are settled. A survey of the mediators is summarized in Table IX which shows the percentage of cases settled at each stage of the Board of Inquiry process. It is important to note that 90 percent of those cases settled prior to the first Board meeting occurred during the first year of the amendments (Tanner, et al., 1977, p. 295). Over 50 percent overall, and more recently a greater percentage, of these cases were settled only after the contract had expired. This does not place the Board of Inquiry procedure in a very favorable light since it might well be expected to have its effects, if any, prior to contract expiration.

It could, perhaps as well, be argued, however, that the procedure was useful in settling at least 25 percent of the cases prior to contract expiration. We, of course, do not know what the base rate for settlement in these cases without Boards of Inquiry would be; but, on

Table IX: Distribution of Cases Settled During the Board of Inquiry Process

Parties Reached Agreement	Percent
Prior to meeting the first time with the board	13.9
During the board's term	6.9
After the board report was issued, but before the expiration date	25.0
After the contract expiration date	54.2

Source: Lucretia Dewey Tanner, Harriet Goldberg Weinstein, and Alice Lynn Ahmuty, Impact of the 1974 Amendments to the NLRA on Collective Bargaining in the Health Care Industry, Federal Mediation and Conciliation Service, 1977.

the face of it, 25 percent is not an inconsiderable proportion. This is consistent with the results of Tanner, Weinstein, and Ahmuty's survey of mediators who participated in Board of Inquiry cases. These mediators indicated that in almost three-fourths of these Board cases they were able to use the Board's recommendations as a basis for further negotiation and that in 20 percent of the cases where the fact finders made recommendations on the issues they were accepted in total (p. 295). It should be noted that strikes occurred in 13 percent of the 120 fact finding cases. This compares with only 4.6 percent of nonfact finding cases. Since we might assume that, in the absence of fact finding, the base rate for strikes in this category might approach 100 percent, this seems to be a favorable record.[18] It would appear, then, that the fact finding procedure has been useful in resolving at least some impasses. It would also appear that there is room for improvement.

The results of the Tanner, et al. (1977), survey of participant opinion on particular issues have already been mentioned. A "general assessment" of the Board of Inquiry and fact finding procedure by the participants is now discussed. Approximately 57 percent of the mediators found that the procedure met ". . .the needs of the parties and advances the goals of collective bargaining" (p. 304). About 65 percent of the fact finders surveyed indicated a similar assessment of the Board of Inquiry procedure (p. 305). Both groups were critical of the timing of the statutory procedure, however (p. 305). Over 58 percent of management negotiators found the Board of Inquiry procedure at least "somewhat helpful" while at least 59 percent of labor negotiators fell into this category (p. 307). Apparently, the negotiators did not develop strong negative feelings about the procedure since less than 18 percent of either category found it a hindrance (p. 307). It appears, then, that the participants are reasonably satisfied with the procedure. Their main criticism seems to be connected with the timing of the statutory procedure and the time limit (fifteen days) within which the fact finders must hold hearings and prepare reports.

As one would expect, a large number of those participants who were surveyed (over 80 percent) recommended some change (p. 310). A central point, already mentioned, is that the appointment of the Board of Inquiry occurs much too early in the bargaining process. Some proposed to abandon this procedure altogether (p. 311). However, the most frequent proposal by negotiators and mediators was that a fact finding Board be established 1) at the request of either (or both) parties, and/or 2) at any time at the request of the Federal Mediation and Conciliation Service (p. 311). It is apparently felt that greater flexibility would more adequately serve the dispute resolution purposes of the Act. Not surprisingly, the fact finders supported extension or change in the fifteen-day statutory limit from hearing date to report (p. 312). Altogether, these proposals represent exten-

[18]Tanner, Weinstein, and Ahmuty (1977, p. 378). The category, by definition, is one where a work stoppage is likely.

sions or improvements in the Board of Inquiry procedure rather than any inclination to fundamentally alter or abandon it. Considering that this represents something of a consensus of neutrals (mediators and arbitrators), union, and management negotiating representatives, it provides remarkable support for some variant of the procedure.

CONCLUSIONS

This review of the effects of collective bargaining on the health care industry noted two somewhat contradictory trends. The first of these trends is that there are significant and important effects. The level of unionism in the industry has increased. Unions have negotiated contracts with distinctive features such as joint study committees to deal with professional issues. They have been able to increase the wages of their members relative to those of non-members and this effect has tended to "spill over" onto non-members working in hospitals with unions. Also, the net effect of unions is to increase somewhat the costs per patient day of hospital care. Finally, there has been an increase in the number of work stoppages and labor disputes.

The contradictory trend is that while these effects are apparent, they do not seem to be more noticeable for the health care industry than for many others. Increased organizing activity has taken place but it does not represent the overwhelming upsurge which had originally been dreaded or anticipated. Unions have affected relative wages but these effects are generally at the lower end of the range of what has been found in other industries. Much the same argument holds for the incidence of disputes and work stoppages. The result, then, is a picture of change without revolution. Contrary to predictions, Armageddon has not arrived.

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Physician Influence on Blue Shield Plans: A Reexamination of the Findings *by William Lynk**

INTRODUCTION

Government regulation of industries and particular firms has traditionally taken the form of externally imposed controls on prices, product quality, emission of pollutants, and so on. Perhaps in response to the apparent inability of these blunt instruments to fully accomplish the results regulators claim to desire, a number of proposals have emerged which seek to achieve the same results by reform of the mechanism of corporate governance and control (see Winter, 1978). A major feature common to many of these proposals is federal--rather than state--chartering of corporations. This permits the corporation's continuing charter to be made contingent on compliance with a variety of standards on matters the federal government deems important. One fairly popular such standard is that the corporation's board of directors contain some minimum proportion of "outside" directors, frequently with the stipulation that these directors be members of "the public." The basic idea, from a regulatory point of view, is to change the goals of the corporation in a decentralized manner, eliminating or mitigating the need to impose external constraints on firm behavior. As Winter (1978) puts it, a purpose of such proposals is ". . .to regulate the structure and behavior of corporate management so as to alter the relation of firms to society."

In view of the abundant level of attention currently paid to the "crisis" in health care costs, it is not surprising that an application of this new regulatory concept to the health services market has been discovered. The application concerns the role of health insurers in the determination of prices and costs in the health services market; more specifically, it concerns the role of Blue Shield in influencing the level of physicians' fees.

THE BASIC HYPOTHESIS

While there is some variation in the circumstances surrounding the inception of each of the sixty-nine Blue Shield Plans, one fairly common denominator was support, in varying degrees, of the practicing physicians whose patients were potential enrollees of the Plan. In addition, physicians initially were involved directly with the management of each of the Plans, and generally comprised a majority of the governing board of directors. While space precludes a detailed treatment of the institutional history and evolution of Blue Shield, it is

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reasonably accurate to characterize the system as "physician-sponsored health insurance." Although the accuracy of this characterization has become more questionable over time, physicians still appear to retain a significant influence on most Plans. In particular, nearly half of all Blue Shield Plan board members are physicians, and over half of the Plans have boards where physicians comprise a majority of the directors.

It is this physician presence on Plan boards, and any resultant effect on the cost of medical care, that has attracted attention as a potential subject for regulation. The justification for regulatory concern over the characteristics of the Plans' boards rests on a conflict-of-interest argument. Physicians, the argument goes, derive their income through fees collected for medical services performed, and some fraction of these fees are collected from Blue Shield. Therefore, physician board members and, in fact, all physicians stand to gain if the Plan allows higher fees.

A necessary condition of the hypothesis appears to be that Blue Shield have a significant degree of monopoly power, in the sense of the ability to influence the price of health insurance, or at minimum some other net advantage over competing commercial insurers. The most plausible source of such an advantage lies in the structure of both taxes and the regulation imposed on insurers by the states; it is common knowledge that Blue Shield typically enjoys a lower premium tax rate than its commercial competitors, though quantification of the full impact of all regulatory and tax burdens has proved elusive. A more precise description of this process and all of its implications awaits the development of more complete economic models of this market. Nevertheless, it seems readily apparent that a central prediction of the "physician dominance - conflict of interest" hypothesis is that, relative to a benchmark case where the Plan is controlled by and operated in the interests of subscribers, physician influence should have the effect of raising allowed fees. Whether this effect is large or small, or whether it is suppressed by other factors, remains a question to be addressed by empirical analyses rather than by theory alone.

PRELIMINARY INVESTIGATIONS

Such analyses have, in fact, already been undertaken by various parties with an interest in the issue. For example, the Federal Trade Commission has been involved since 1975 in an ongoing investigation of Blue Shield, a major focus of which is the potential effect of physician involvement in the determination of Plans' payment levels. In a similar vein, the Department of Health, Education, and Welfare began in April of 1978 to examine, among other things, the question of whether Medicare and Medicaid costs could be reduced by withholding eligibility to participate as carriers or intermediaries from insurers whose boards of directors were "dominated" by providers of health care. And finally, the Subcommittee on Oversight and Investigations

of the House of Representatives' Interstate and Foreign Commerce Committee held investigatory hearings in March and April of 1978, the topic of which is evident from their title.[1]

At this writing, neither the FTC nor the DHEW has issued its findings or conclusions, presumably because the data and information collected require further analysis before a sound interpretation can be made. The House Subcommittee, however, has recently issued a report containing some of its findings and also recommendations.[2] The report does not exhaust the Subcommittee's interest in Blue Shield; rather, it "...focuses upon the composition of Blue Shield boards of directors and the resulting conflicts of interest." (U.S. House of Representatives, "Report," 1978) The relatively specific focus of the report permits an instructive examination of some of the data the Subcommittee assembled and an interesting opportunity to observe, albeit indirectly, the process by which conclusions are derived from analysis.

Nineteen individuals testified during the five days of hearings, generally offering prepared statements and exhibits as well as response to the Subcommittee's questions. Among others, the witnesses included officers of Blue Cross and Blue Shield Plans and their national associations, officials from both federal and state government agencies, and representatives of organized consumer groups. Taken as a whole, the body of testimony appears inconclusive. The witnesses tended to differ among one another in their perceptions of the relevance of the various issues, in their assessments of the facts of particular issues, and, particularly, in their recommendations and advice to the Subcommittee.

In apparent response to the ambiguous nature of the testimony, counsel to the Subcommittee requested additional information on the level of fees over several years for a selection of medical procedures in several Blue Shield Plans. Shortly after the conclusion of the hearings, the Blue Cross and Blue Shield Associations sent the Subcommittee a tally of maximum customary allowances under the Plans' UCR (usual, customary, and reasonable) reimbursement systems, covering eight procedures in ten Plans for the years 1975 through 1978. The data for 1977 are reproduced below in Table I. Also in Table I are the 1977 percentages of each Plan's board comprised of physicians. These data, requested by the Subcommittee, are examined below to measure "...what the subcommittee believed to be the most important result of doctor domination, that is, that physicians will act in concert to take certain actions affecting fees." (U.S. House of Representatives, "Report," 1978)

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[1] "Skyrocketing Health Care Costs: The Role of Blue Shield." Cited hereinafter as "Skyrocketing Costs."

[2] "Conflicts of Interest on Blue Shield Board of Directors." Cited hereinafter as "Report."

Table I: 1977 Customary Allowances and Board Composition for Subcommittee Selection of Procedures and Blue Shield Plans

Procedure	Blue Shield Plans					
	Alabama	Chattanooga, Tennessee	Memphis, Tennessee	Atlanta, Georgia	Columbus, Georgia	California
Coronary bypass						
Single	$1725	2100	2450	1900	1300	n.a.
Double	1900	2200	2450	2300	1600	n.a.
Triple	2015	2200	2525	3200	2200	n.a.
Hip Replacement	2140	1782	1980	1700	1500	2003
Tonsillectomy	320	240	220	250	200	227
Cholycystectomy	720	617	675	700	513	713
Hysterectomy	720	650	741	700	575	756
Simple Mastectomy	545	550	350	407	330	404
Percent Physicians on Board, 1977	23.0%	33.3	33.3	40.7	86.6	60.9

(continued on following page)

Table I (continued): 1977 Customary Allowances and Board Composition for Subcommittee Selection of Procedures and Blue Shield Plans.

Procedure	Blue Shield Plans					
		Illinois				
	Michigan	Area A	Area B	Area C	Indiana	Connecticut
Coronary Bypass						
Single	1708	2500	2500	n.a.	1500	1400
Double	2211	3000	2500	n.a.	2000	1600
Triple	2637	3600	3000	n.a.	2500	1600
Hip Replacement	1135	2000	1620	1500	1700	1150
Tonsillectomy	162	275	200	200	210	175
Cholycystectomy	474	800	600	600	551	475
Hysterectomy	538	850	800	600	615	500
Simple Mastectomy	294	500	500	350	450	250
Percent Physicians on Board, 1977	19.1%	25.6	25.6	25.6	80.0	50.0

Not available indicated by n.a.

California allowances reported as an average of 28 separate fee areas.

Source: "Skyrocketing Health Care Costs: The Role of Blue Shield." Hearings before the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, April, 1978.

From both the selection of Plans and also from testimony in the hearings, it is apparent that the Subcommittee wished to compare contiguous states' allowance levels.[3] The purpose of a comparison of contiguous states is to roughly hold constant in the comparison a wide variety of factors---costs of living, urbanization, regional differences, and so on--which would affect the level of fees, in order to isolate the effect of a particular factor which does have measurable variation within the comparison. The collection of Plans chosen is effective in this respect; within both the midwestern and southern blocs of contiguous states there is marked variation in the degree of physician representation on Plan boards. The hypothesis that physician board members have the intent and, given sufficient dominance, the ability to raise allowance levels predicts that within each bloc the maximum allowed charge ought to rise with increasing physician representation on the Plan board.[4]

PLAN COMPARISONS

The hypothesis does not fare too well in its confrontation with the requested data. There are a total of seventy-two possible comparisons of fee differences across Plans that the hypothesis could predict within the southern group of five Plans; fifty comparisons are possible within the three-Plan midwestern group. (Note that the hypothesis cannot be asked to predict differences between the Chattanooga and Memphis Plans; since their boards have identical proportions of physician directors, there is no board composition difference to predict an allowance difference. Similarly, differences among the Illinois Plan's three fee areas are clearly not explicable by a board composition argument.[5]) Out of this total of 122 possible opportuni-

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[3]The sample coverage was defined by the Subcommittee, rather than by the Blue Shield Association. The eight procedures were suggested by the testimony of an earlier witness ("Skyrocketing Costs," p. 486). The specific Plans appear to have been selected in part to facilitate pairing for comparative purposes (those in Alabama, Georgia, Illinois, Indiana, and Michigan; "Skyrocketing Costs," p. 657), and in part to include the home states of some of the Subcommittee's members (California, Connecticut, and Tennessee; "Skyrocketing Costs," pp. 722 and 757).

[4]For reasons why continuous measures of representation are more useful than a simple "majority-minority" distinction, see Buchanan and Tullock (1962). The conclusions of the immediately following analysis are only strengthened if such a dichotomous distinction is substituted as a measure of physician dominance.

[5]The Illinois Blue Shield Plan divides the state into three areas for determining maximum customary allowances. Area A contains five counties in the Chicago metropolitan area; Area B consists of sixteen counties covering most other urban communities in the state; and Area C contains all other counties. The California Blue Shield Plan is similar, distinguishing twenty-eight separate geographic areas.

ties, the hypothesis that greater physician dominance leads to higher allowances is confirmed 52 times and rejected 70 times.[6] Thus, the hypothesis correctly predicts the higher of a pair of fees in this sample about 43 percent of the time, or slightly worse than flipping a coin.

There are legitimate questions that might be raised about the efficiency of this "paired comparison" type of analysis for which the Subcommittee largely selected the sample. One is that geographic proximity alone may not do an acceptable job in holding all other relevant factors constant across comparisons. (Consideration of such contiguous pairs as Oregon-California and New York-Vermont may illustrate the point, though the comparison problems seem less severe in the present sample.) Another deficiency is that useful information may be lost by not considering the sample in its entirety. If in fact some of the factors which proximity is supposed to "hold constant" can be identified, measured, and accounted for, then meaningful comparisons can be made of allowance levels between Plans in different geographic regions.

For these and other reasons it is useful to further analyze the sample by other means. Through least squares regression of the level of allowances on the proportion of the Plans' boards comprised of physicians, and on other relevent variables, it is possible to estimate any contribution that "physician dominance" makes to the elevation of allowances.

ADDITIONAL ANALYSIS

In order to use all of the information in Table I to detect the effect of board composition, it is necessary to account for factors other than Plans' boards which cause the allowances to vary across procedures and across Plans. First, allowances obviously vary across different procedures, since there are different degrees of complexity associated with each procedure. This is accounted for by using dummy variables in the regression equation which, in effect, adjust for these differences in average allowances across the different procedures. This permits all the allowances for all of the procedures to be grouped together in a single estimated equation. In addition, the general level of allowances will vary across the eight states in the sample for reasons entirely separate from the resident Plans' board composition; these reasons have to do with the underlying conditions of the supply of and demand for medical services. While the total number of factors which might be relevant in determining supply and demand is assuredly very large (see, e.g., Steinwald and Sloan, 1974), an attempt to capture at least some of the important differences in the Plans' markets is

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[6] The batting average is 32 correct out of 50 in the midwestern group and 20 of 72 in the southern group. If one interprets "contiguous" literally, then the Illinois-Michigan comparisons are inadmissible and the hypothesis' prediction record falls to 31 correct and 70 wrong.

made by including the per capita income of the state and the percentage of the state's population living in metropolitan areas.

Given these considerations, the regression equation to be estimated is defined by:

$$ALLOW_{ij} = f(PCI_i, METRO_i, MD_i, D_j), \quad (1)$$

where $ALLOW_{ij}$ is the allowance level in Plan i for procedure j, PCI_i and $METRO_i$ are the state per capita income and urbanization variables discussed above, MD_i is the fraction of Plan i's board of directors comprised of physicians, and D_j is a vector of dummy variables related to each procedure j. (In the actual empirical analysis, the natural logarithm of the allowance is estimated. This is equivalent to specifying that each explanatory variable has the same percentage effect on every procedure's allowance, rather than the less plausible specification of the same absolute dollar effect on each procedure.)

To the extent that the per capita income, PCI, catches both greater demand for medical care and increased costs of living, the prior expectation is that its coefficient should be positive. The sign of METRO is less obvious. The increased quality of care many associate with metropolitan areas suggests a positive sign, while the increased competitiveness in service markets typically engendered by reduced geographic dispersion argues for a negative sign;[7] hence, a priori, the sign is uncertain. The signs of the dummy variables (D_1, D_2, D_3, D_4, D_6, D_7, D_8) will all be positive, the magnitude of each reflecting the higher level of its procedure's allowance relative to that for the omitted reference procedure (tonsillectomy). Finally, the sign of the coefficient of MD is the test of the Subcommittee's hypothesis about the effect of permitting physicians to serve on Blue Shield Plan boards of directors. If there is anything to the hypothesis, the sign of MD should be positive; the larger is its estimated coefficient and the greater the statistical significance of the estimate, the stronger is the confirmation of the hypothesis.

Table II reports the results of the regression analysis.[8] The overall explanatory power of the equation—an adjusted R^2 of .9509—may be misleading in that most of the variance among allowances is accounted for, not surprisingly, by the seven procedure dummy variables. The variables of more interest are the first three in the table. Per capita income has a statistically insignificant effect on al-

[7]The latter effort is an implication of the lower costs to urban consumers of searching for and comparing different providers; see Stigler (1961).

[8]Illinois and California were each included as single observations of each procedure (rather than three and twenty-eight, respectively), with the Plan's allowances computed as the unweighted average of all of their fee areas' allowances.

Table II: Regression Estimate of 1977 Allowances for Subcommittee Selection of Procedures and Blue Shield Plans

Independent Variables	Estimated Coefficient	t-ratio
MD	-.2841	2.709
PCI	-.1725	0.419
METRO	-.0029	0.611
Dummy Variables		
BYPASS(1)	2.0895	23.780
BYPASS(2)	2.2358	25.444
BYPASS(3)	2.3824	27.113
HIP REPL.	2.0159	23.637
CHOLYCYSTECT.	1.0116	11.861
HYSTERECTOMY	1.0839	12.709
MASTECTOMY	0.5799	6.799
Constant	7.2290	2.211
N	77	
R^2	.9509	

Allowances and per capita income in logarithms. R^2 adjusted for degrees of freedom.

Variables defined in text.

lowances. Moreover, its estimated coefficient is negative, the reverse of the prior expectation. METRO, the measure of urbanization in the Plan's state, also has a negative and statistically insignificant coefficient, though, given the theoretical ambiguity of its effect, this may not be surprising. Finally, the estimated effect of MD is statistically significant, and consistent with the somewhat less precise results of the previous paired comparison analysis. The results of this analysis indicate that the net consequence of physician representation on Plan boards could be a lower—but, in any case, not higher—allowance level.[9]

To check whether this result might be dependent on the pooling of the eight procedures within the same sample, the regression analysis was repeated eight times, once for each individual procedure. Here the specification is:

$$ALLOW_i = f(PCI_i, METRO_i, MD_i). \quad (2)$$

The advantage of this approach is that any problems with pooling the procedures are avoided; this advantage is purchased by a loss of precision in each estimate, as the sample size for each regression is reduced.

Table III reports the estimated regression coefficients from each procedure. The results are not particularly impressive; in five of the eight equations, there are literally no significant coefficients.[10] It is, however, notable that in eight trials there is only one reversal of the earlier findings: MD still appears to be generally associated with lower, rather than higher, allowances.

THE RECOMMENDATIONS

Three separate analyses have been performed above on the requested sample of Plans and procedures. All three tell the same story: the sample data do not provide support for the "physician dominance - conflict of interest" hypothesis. No empirical study can prove, in the exact sense of the term, the presence or absence of a hypothesized relationship between two variables; that degree of certainty is reserved for theorems of logic. Instead, the process of empirical investigation has the more modest task of establishing a certain level of confidence in the existence of such relationships.

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[9]It is suspected that the poor explanatory performance of the regression is due to the unweighted averaging of the twenty-eight California areas. Dropping the five California observations from the sample results in coefficients of 1.1532 (t=2.664) for PCI, -0.0231 (t=4.151) for METRO, and -0.5883 (t=5.512) for MD.

[10]This, again, may be due to the averaging of the California fee areas (see note 9). In the first three estimating equations California is absent due to missing allowance figures in their submission, and there is a marked improvement in the model's ability to explain the data.

Table III: Regression Estimates by Procedure of 1977 Allowances for Subcommittee Selection of Procedures and Blue Shield Plans

Procedure	Independent Variables MD	PCI	METRO	N	R^2
Coronary Bypass:					
Single	-0.928 (2.690)	1.500 (1.072)	-0.023 (1.275)	9	.4675
Double	-0.808 (3.623)	2.267 (2.507)	-0.030 (2.599)	9	.6391
Triple	-0.885 (6.505)	4.321 (7.836)	-0.058 (8.145)	9	.9113
Hip Replacement	0.070 (0.224)	-1.851 (1.519)	0.013 (0.956)	10	.1932
Tonsillectomy	-0.113 (0.451)	-1.386 (1.423)	0.007 (0.649)	10	.3187
Cholycystectomy	-0.147 (0.558)	-1.015 (0.994)	0.007 (0.646)	10	.0493
Hysterectomy	-0.124 (0.499)	-0.625 (0.647)	0.004 (0.397)	10	-.0846
Simple Mastectomy	-0.169 (0.419)	-0.974 (0.624)	0.002 (0.099)	10	.0445

Allowances and per capita income in logarithms.

t - ratios in parentheses.

R^2 adjusted for degrees of freedom.

Variables defined in text.

Successive independent replications increase that confidence if their results are consistent, and reduce it if the results are inconsistent.

Therefore, it may not be surprising that the Subcommittee apparently chose to doubt the lack of confirming evidence provided by its sample in addressing the question, "Is doctor domination a potential factor, leading to price fixing or restraint of trade?" (U.S. House of Representatives, "Skyrocketing Costs," 1978) That the message in the data was given less weight than at least a subset of the formal testimony is most apparent in the Subcommittee's recommendations dealing explicitly with board composition. Four such recommendations are included in the final report (U.S. House of Representatives, "Report," 1978):

- The Congress was asked to "Vest policyholders with the right to choose the directors of private health insurance corporations such as the Blues";
- The Department of Health, Education, and Welfare was advised to ". . .require that all intermediaries, carriers, and fiscal agents (and their subcontractors) not have provider dominated boards as a condition of participation in Medicare and Medicaid";
- The Federal Trade Commission was directed to "Consider promulgating a rule prohibiting physicians and physician organizations from dominating Blue Shield plans through their membership on the boards of directors or otherwise"; and
- The "National Association of Blue Shield Plans" was urged to take ". . .a policy position similar to that of the Blue Cross Association, which would eliminate doctor domination."

Nevertheless, it would be unwarranted to interpret this juxtaposition of data and recommendations as an example of wholesale rejection of empirical methodology in favor of a more anecdotal approach to analysis. Indeed, the Subcommittee itself suggests that ". . .indepth studies need to be designed and more cost-related data need to be collected," (U.S. House of Representatives, "Report," 1978) implying that broad empirical evidence is not wholly ignored in preference to more incident-specific testimony. This conjecture is further supported by a separate, published opinion of one of the Subcommittee's members.[11] Relying principally upon a part of the paired comparison analysis reported above, he argues that the basic "conflict of interest" hypothesis ". . .is quite simply not supported by the evidence taken by the Subcommittee during the course of its hearings." (U.S. House of Representatives, "Report," 1978) The opinion concludes in part:

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[11] "Separate Views of Hon. James M. Collins, M.C." Attachment to "Report."

> . . .the fact of doctor domination is not the problem the Subcommittee Report makes it out to be. The Report's position is theoretically unsupported by actual data, whereas my position is supported by hard data. . .if it cannot be shown, and it cannot, that physician domination results in higher fees then the recommendations calling for heightened activity and increased power to the Federal Trade Commission are groundless and without support. The hard evidence simply does not identify a problem area warranting a massive intrusion by the Federal Government into an area being effectively regulated by the States (U.S. House of Representatives, "Report," 1978).

CONCLUSIONS

Two points deserve concluding emphasis. The first is that while the substantive findings reported in this paper may be of some inherent interest as an initial exploratory analysis, they cannot be considered, nor, for reasons outlined above, are they represented as a definitive determination of the consequences of physician influence in this institutional context. More precise theoretical models of the underlying economic processes and more comprehensive empirical analysis are both required before that answer emerges. The second point, which may be the principal lesson from this episode, is that the data do not appear to speak for themselves in regulatory and investigative hearings of this sort. The resulting conclusions and recommendations are (and probably always will be) formulated on the basis of testimonial narratives and personal impressions as well as quantifiable statistics. This stands in some contrast to the current custom in economic research, in which a given set of facts is expected to deal primarily with other sets of facts. Nevertheless, it may be most useful (and consonant with that custom) to simply consider this episode itself as an empirical observation, one whose value lies in understanding the process by which official judgments are rendered.

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The Distribution of Prepaid Physician Services in Medical Group Practice: U.S. 1975

*by Larry J. Freshnock**

INTRODUCTION

Because of the recent rise in health care costs, interest in new forms of contractual relationships between consumers and providers of health care has increased sharply. In many areas of the U.S., individuals are now able to choose between conventional health insurance plans and prepaid contractual arrangements. The prepayment contract states that the consumer will be provided with a stated range of medical services for a fixed time period in return for a set advance capitation payment. Research has indicated that total expenditures by individuals with prepaid plans administered by a medical group practice are significantly less than total expenditures by consumers in traditional health insurance programs with the same benefits (Donabedian, 1969; Roemer and Shonick, 1973). Group practice is defined as the application of medical services by three or more physicians formally organized to provide medical care, consultation, diagnosis and/or treatment through the joint use of equipment and personnel, and with the income from medical practice distributed in accordance with methods previously determined by members of the group (Goodman et al., 1976, p. 2).

Given demonstrated cost savings, the development and expansion of prepayment in the group practice context has been viewed as a potential strategy for reducing health care expenditures in the U.S. (Klarman, 1969; Weil, 1976). Principally for this reason, the federal government has since 1972 subsidized group practices which offer prepaid plans meeting specific criteria related to enrollment restrictions and benefit packages. These group practices have come to be known as Health Maintenance Organizations (HMOs).

However, despite increasing interest and substantial federal endowment, consumer membership in such plans remains limited. As of November, 1978, the total membership for all U.S. HMOs was 7,470,963 or approximately 3.4% of the total population (US-DHEW, 1979). Similarly, in 1975 only 4.3% of U.S. physicians dispensing patient care practiced in groups with any prepayment volume (Goodman et al., 1976).

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As indicated in Figure 1, there is substantial variation in prepaid physician services across different regions of the U.S. We define prepayment strength (PS_i) in the i^{th} areal unit as:

$$PS_i = \frac{\sum_{j=i}^{n_i} PGP_j}{n_i}$$

where: PGP_j = the percent of prepayment volume in the j^{th} physicians' group practice, and

n_i = the number of patient care physicians in the i^{th} areal unit

PS_i is simply the proportion of total physician services in the i^{th} areal unit delivered under prepaid contracts with medical group organizations. This definition excludes prepaid services delivered under any form of organization other than medical group practice. Prepayment strength in 1975 varied substantially across states of the U.S. from a high of 11.4% in Hawaii to a low of .0053% in Arkansas, approximately a 2000% difference. In general, prepayment strength is high in the Western and Midwestern states and is lower in the Southern region of the U.S.

Given the demonstrated relationships between PGP and medical care costs discussed above, it becomes important to:

1) determine the socioeconomic and medical characteristics of the environment that are related to variation in prepayment strength across areal units and,

2) discuss the possible impact of trends in variables found to influence prepayment strength on the future growth of prepaid plans in the U.S., both regionally and on a national level.

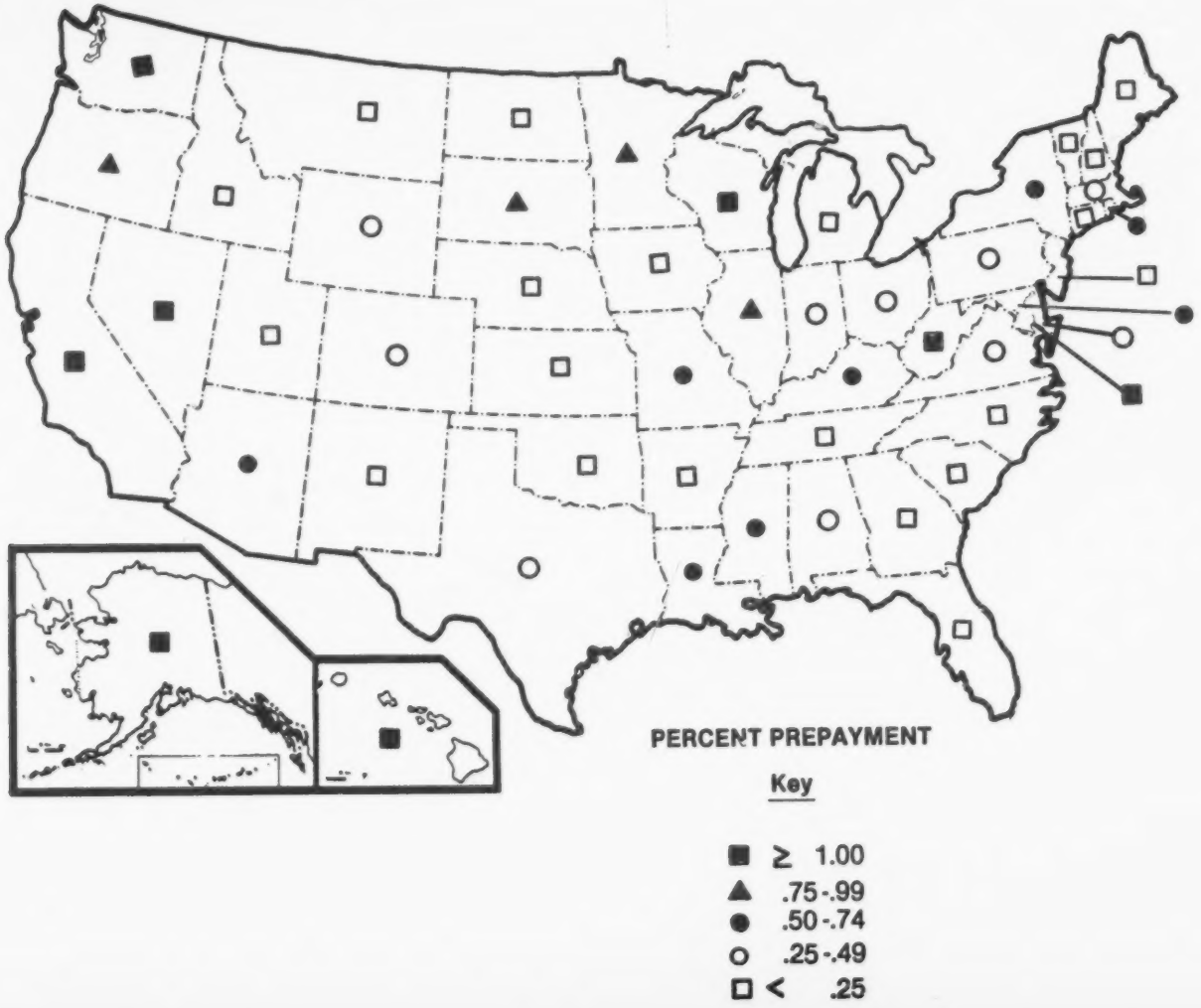
SPECIFICATION OF MODEL

While research in this area is limited, several studies suggest variables which may be related in cross-section to prepayment strength.

To examine factors which may influence prepayment strength, a conceptual framework similar to one developed by Reskin and Campbell (1974) is employed. The relative strength of prepaid services is hypothesized to be a function of:

- the demand for prepaid services,
- the supply of alternative medical services, and
- the extent of medical support facilities in the area.

Figure 1 - Distribution of Physician Services in Prepaid Group Practice: U.S., 1975



THE DEMAND FOR PREPAID SERVICES

Because little is known about the demand for prepaid services, per se, this set is composed of variables related primarily to the demand for physician services in general and only secondarily to the demand for nontraditional forms of medical care.

Previous aggregate studies of physician distribution have isolated a number of factors related to population demand for general physician services. They include age and sex composition (Elesh and Schollaert, 1972; Reskin and Campbell, 1974), population density (Joraff and Navarro, 1971; Marden, 1966), education, and per capita income (Steele and Rimlinger, 1965; Roemer, 1966; Kaplan and Leinhardt, 1973). Populations with high proportions of children, elderly adults, or women are viewed as evidencing high demand for physician services. In addition, education and per capita income are believed to be positively related to access and therefore demand for primary medical care (Reskin and Campbell, 1974).

Several additional demographic indicators have also been linked to the demand for prepaid and other nontraditional forms of medical care. Roemer et al. (1974) in a state-level analysis of group vs. solo practice strength hypothesizes that cooperative forms of care delivery flourished and became accepted in frontier communities with few medical services. These communities today still evidence high acceptance of nontraditional delivery systems. To test this "developmental" hypothesis, Roemer includes state's year of entry into the U.S. in his model. He reports a strong positive effect on group practice strength. To the extent that prepayment is actually an end point on a solo-group-prepaid group continuum (Roemer, 1965; Friedson, 1972), variables influencing group vs. solo practice should also affect prepayment strength.

Moustafa et al. (1971) reports that married persons with children, in contrast to single persons, are more likely to choose an HMO than traditional health insurance. Thus, percent population under 14 years of age is included in our model as a proxy for this variable.

Also, because the contract between patients and the prepaid practice states a fixed time period, we hypothesize that areas with high migration will evidence less prepayment strength than areas with more stable populations. Finally, included is the infant mortality rate to assess the possible effects of this traditional indicator of racial and cultural differences in the demand for medical care on prepayment strength.

The Presence of Alternative Physician Services

Given relatively fixed demand for physician services, prepayment strength should be reduced by the presence of other forms of medical services available in the area. Several variables are used to analyze this relationship. First, the ratio of primary care physicians to population is a generally-accepted measure of physician services in

the area. A second indicator is the ratio of osteopaths to population. This variable is especially interesting in this context because it may reflect opposing influences on prepayment strength. On the one hand, osteopathic services are in competition with prepaid services and should, therefore, negatively affect PS; on the other hand, osteopathic strength may indicate general acceptance of nontraditional medical services and, thus, would be positively related to prepayment. This analysis will provide an initial test of these opposing positions.

Third, a further alternative to either prepaid, general physician, or osteopathic services is the number of emergency rooms per capita in the community. The presence of such facilities is expected to negatively influence prepayment strength.

Medical Resources

Previous research indicates that effects of medical resource factors on both group practice strength (Roemer et al., 1974) and the general physician distribution (Reskin and Campbell, 1974) exist. Studies also suggest that such support facilities as hospital beds and medical schools influence the practice location choice of individual physicians (Joroff and Navarro, 1971). Therefore hospital beds per capita and the number of medical schools in the area are included in the model to determine whether these factors are related to the strength of prepaid services. While the earlier studies report positive effects of beds per capita on group practice strength (Roemer et al., 1974) and general physician distribution (Reskin and Campbell, 1974), there is reason to predict a negative relationship between Beds/Pop and prepayment strength. A principal characteristic of group practices with prepaid services and especially of federally qualified HMOs is the comprehensive range of services they provide. It therefore seems likely that prepaid plans would be successful in areas with underdeveloped hospital and other medical facilities. In essence, it is hypothesized that, while Beds/Pop is included here as a medical resource factor in deference to previous research, it actually is another indicator of alternative supply in this context and should therefore negatively affect prepayment strength.

Two additional variables, per capita funds spent on health and the average age of patient care physicians, are also included. Per capita health funds reflect community priorities in allocating resources among health - and nonhealth-related pursuits. The average age of physicians is included because previous research (Freshnock, 1979) has indicated that young physicians are more receptive to positions in groups with prepayment. Average MD age should therefore be negatively related to PS.

In sum, the strength of prepaid physician services in group practice is hypothesized to be a function of the following variables:

Demand Characteristics

- % $\leq$ 14: percent of county population in 1970 less than or equal to fourteen years of age
- % $\geq$ 65: percent of county population in 1970 greater than or equal to sixty-five years of age
- % Female: percent female county population in 1970
- Population density: county population in 1970 divided by county area in square miles
- Education: median county education in 1970
- Per Capita Income: per capita county income in 1972 (1000's)
- Migration: county population in 1974 minus county population in 1960 divided by county population in 1960
- Entry: year of state's entry into United States
- IMR: average mortality rate for infants under one year of age for 1966-1970 (per 10 live births)

Supply Alternatives

- MD/Pop: total active non-federal physicians in 1974 divided by 1974 population by county
- DO/Pop: total active non-federal osteopaths in 1974 divided by 1974 population by county
- Emergency Rooms: the number of emergency rooms per capita in 1975 by county

Medical Resource Factors

- Beds: total general hospital beds in 1975 divided by 1974 population by county
- Medical Schools: number of medical schools in 1975 by county
- Average MD age: average age of physicians in 1975 by county

DATA

Data for this analysis are derived from the American Medical Association Physician Masterfile and Group Practice File, and from DHEW's Area Resource File. The unit of analysis is the U.S. county. Earlier similar studies have tended to analyze state data (Roemer et al., 1974). However, aggregation by state masks substantial intra-state heterogeneity in both dependent and independent variables and creates problems of multicollinearity. By using counties as units of analysis, these difficulties are reduced.

METHOD

The model was estimated by a multivariate regression method. However, because 2,607 of the 3,078 counties in the population had no prepayment whatsoever, the dependent variable was heavily skewed, standard errors were large, and adjusted R^2 was very low, especially for aggregated data.

It became clear that the distribution of prepaid physician services involved two separate issues:

1) What factors discriminate among counties with and without any prepayment?

2) What factors are related to the distribution of prepaid services in counties where prepaid services exist?

Further analysis also indicated that relationships between independent variables and prepayment strength differed sharply for rural vs. urban counties, a distinction which has been reported by previous research (Roemer et al., 1975; Rushing and Wade, 1973; Steele and Rimlinger, 1965; among others).

Therefore, the analysis was stratified by population density in a manner that closely approximates the SMSA-nonSMSA dichotomy. Two dependent variables were examined, a 0-1 dummy variable indicating the absence or presence of prepaid services in the county, and prepayment strength as defined above but only among counties evidencing some prepayment.

Though the former is a dichotomous dependent variable, OLS was used to estimate the equations because 1) studies have indicated trivial differences between OLS and limited-dependent variable techniques (Werner et al., 1978) and 2) goodness-of-fit measures are not well developed or easily interpreted in either the probit or logit estimation models.

RESULTS

Means and standard deviations of dependent and independent variables discussed above are presented in Table I for both rural and urban counties.

As expected, the probability of prepayment existence is sharply higher for urban counties than for rural counties. Surprisingly, however, the percentage of prepayment in counties where such services exist is approximately three times greater in rural than in urban counties. This suggests that while prepaid services are relatively infrequent in rural areas, where they have taken hold, prepayment has developed and expanded rapidly.

Means and standard deviations of independent variables are, for the most part, as expected, with urban counties evidencing slightly greater elderly and female populations, education, per capita income,

Table I: Means and Standard Deviations (in parentheses) of Variables Included in a Model of Prepayment Existence and Strength for Rural and Urban Counties.

Dependent Variable	No Prepayment/ Prepayment		Percentage Prepayment	
	Rural	Urban	Rural	Urban
	.079	.445	5.03	1.72
	(.026)	(.497)	(7.60)	(3.18)
Demand Characteristics				
% $\leq$ 14	.284	.289	.286	.284
	(.038)	(.034)	(.037)	(.031)
% $\geq$ 65	.126	.092	.110	.092
	(.038)	(.030)	(.034)	(.028)
% Female	.504	.510	.501	.512
	(.026)	(.026)	(.022)	(.015)
Pop. density	.312	8.19	.412	15.9
	(.227)	(35.0)	(.250)	(51.5)
Education	10.7	11.7	11.4	11.9
	(1.41)	(.917)	(1.29)	(7.28)
PC Income	2.84	3.60	3.15	3.87
	(.548)	(.607)	(.535)	(.669)
Migration	-.988	-.986	-.983	-.985
	(.036)	(.026)	(.074)	(.031)
Entry	1839	1815	1853	1819
	(37.3)	(32.1)	(38.8)	(35.7)
Inf. Mortality	.208	.189	.193	.183
	(.075)	(.036)	(.058)	(.033)

(continued)

Table I: (continued)

Dependent Variable	No Prepayment/ Prepayment		Percentage Prepayment	
	Rural	Urban	Rural	Urban
Supply Alternatives				
MD/Pop	.055	.128	.091	.173
	(.036)	(.122)	(.059)	(.143)
DO/Pop	.006	.006	.006	.006
	(.014)	(.009)	(.032)	(.009)
Emergency Rooms	.007	.002	.005	.002
	(.008)	(.002)	(.004)	(.001)
Medical Resources				
Hospital beds	.438	.475	.480	.522
	(.329)	(.278)	(.268)	(.208)
Health Funds	.124	.107	.126	.103
	(.167)	(.133)	(.150)	(.124)
Medical Schools	.003	.162	.033	.340
	(.055)	(.546)	(.180)	(.769)
Avg. MD Age	50.4	47.3	48.7	45.9
	(6.67)	(4.04)	(4.09)	(3.74)
N	2279	654	180	291

physician/population ratios, hospital beds, and medical schools than rural counties. Rural counties tend to be located in states that joined the union later and evidence larger young populations, higher infant mortality and average physician age, more emergency rooms per capita, and higher per-capita health funds than do urban counties. Interestingly, the ratio of osteopaths to population is similar in urban and rural areas.

Results of the multivariate regression analysis are presented in Table II. Metric regression coefficients indicate the net change in the dependent variable attributable to a one-unit change in an independent variable and reflect relative magnitude across equations. They should not, however, be used to compare the importance of variables within any single equation.

The reader should note that columns (1) and (2) reflect effects on the probability that prepaid services exist among all counties in the U.S. (excluding those with no physicians and/or population). In contrast, columns (3) and (4) indicate influences on prepayment strength in only those counties where prepayment exists.

The Influence of Demand Variables

In the absence of any more-defined theoretical perspective, it was hypothesized that county characteristics previously linked to increased demand for general physician services should also positively affect prepayment strength. This position, as related to either elderly or youthful populations, is rejected for urban counties. Both existence and strength of prepayment are promoted in areas without these high demand characteristics. Similarly, in rural counties the probability of prepayment existence is sharply reduced by percent population aged 65+. Predicted positive effects for percent female receive moderate support for urban counties only. Hypotheses related to education, migration, and infant mortality are also rejected. However, effects of per capita income and population density are, in general, as predicted in the case of prepayment existence, but do not similarly influence the strength of prepaid services.

Strongest support is for year of state's entry into the union, the only variable in the demand characteristics set previously related specifically to demand for nontraditional forms of physician services (Roemer et al., 1974).

In general, the hypothesis that variables related to increased demand for general physician services also increase demand for prepaid services is not well supported.

The Effects of Supply Alternatives

Supply alternatives were hypothesized to negatively affect the prepayment dependent variables through competition given a fixed level of demand. This prediction is supported only for emergency

Table II: Metric Coefficients for Variables Included in a Model of Prepayment Existence and Strength for Rural and Urban Counties

Dependent Variable	No Prepayment/ Prepayment		Percentage Prepayment	
	Rural	Urban	Rural	Urban
Demand Characteristics				
% $\leq$ 14	.023	-3.00**	42.1*	-37.3**
% $\geq$ 65	-.526**	-1.58*	24.4	-31.5**
% Female	-.172	3.05**	-21.5	1.77
Pop Density	.154**	.001	-.890	3.23
Education	-0.13*	.000	-1.69**	3.87
PC Income	.035*	.209**	.251	.396
Migration	.211	.513	-2.80	.931
Entry	.121**	.119*	1.14	2.40**
Inf. Mortality	-.080	-.864	-1.49	-20.1**
Supply Alternatives				
MD/Pop	1.91**	-.045	-8.00	.000
DO/Pop	.760*	-.352	98.4**	-41.1*
Emergency Rooms	-1.42	-27.5*	88.9	554.2**
Medical Resources				
Hospital Beds	-.041*	.132	-3.62	-2.50**
Health Funds	-.012	-.249*	-1.12	3.04*
Medical Schools	.426**	.098**	4.61	-.076
Avg. MD Age	-.001*	-.021**	.297*	.047
R^2	.141	.280	.285	.274

*.01 $\leq$ p $\leq$ .05.

**p < .01

rooms' per capita influence on existence and the DO/Pop ratio's effect on prepayment strength. A more specific hypothesis was developed for the effects of the DO/Pop ratio. Because osteopathic services are themselves considered to be nontraditional forms of medical services, we hypothesized that areas with high osteopathic concentrations might also evidence strong prepayment strength, both variables reflecting high acceptance of nontraditional medical services. This view is strongly supported for rural areas and for both dependent variables.

Relationships with Medical Variables

The variable hospital beds per capita was expected to negatively influence prepayment through the competition mechanism. This position is moderately supported as two of four coefficients are negative and significant. Per capita health funds show a significant negative effect on prepayment existence and a significant positive influence on prepaid strength. This again indicates the sharp differences in causal factors affecting these two dependent measures.

The presence of medical schools in the county positively influences the probability that prepaid physician services exist in both urban and rural counties. However, this variable shows no further influence on subsequent growth of prepayment in either county type. Finally, average MD age was expected to negatively influence prepaid services because research has indicated that young physicians are significantly more likely to enter groups with prepayment than are older physicians. This hypothesis is, again, strongly supported for prepayment existence but rejected in the case of prepaid strength.

Differences in Effects on the Existence and Growth of Prepayment

In comparing independent variable effects on each of the two dependent measures, it becomes clear why the straightforward analysis of prepayment strength for all counties was unsuccessful. Of nineteen significant influences on the prepaid dichotomy, only five are replicated in sign and significance on percentage prepayment. This substantiates the view that factors influencing the inception of prepayment may not similarly affect its subsequent growth and development.

For example, population density and per capita income strongly increase the probability of prepayment existence in rural counties but do not affect variation in prepaid services in rural counties where prepaid services exist. This suggests the possibility that in rural areas there are critical thresholds of population density and per capita income that must be surpassed before prepayment is viable. However, subsequent increases in either demand proxy do not also influence prepayment strength. Similarly, percent female population in urban counties and the MD/Pop ratio in rural counties positively affects existence but does not significantly affect the strength of prepaid

services. Finally, in three instances (emergency rooms in urban counties, per capita health funds in urban counties and average physician age in rural counties) significant effects on existence become reversed significant influences on prepayment strength.

DISCUSSION

From a public policy viewpoint, the results of this analysis are not promising. Because the U.S. population is now aging rapidly, demands for medical care by the elderly will increase sharply in the future. However, the findings of this analysis indicate that, at present, elderly populations are not utilizing prepaid physician services which could provide more comprehensive care at perhaps lower total cost. This may possibly be the result of Medicare coverage for the elderly which reduces their utilization of other insurance arrangements. Further research directed at the aged population segment should investigate this hypothesis.

The effects of education, especially in rural counties, suggest that the better educated still choose to purchase traditional fee-for-service physician services. It is possible that less-educated blue collar workers join prepaid plans through union or other cooperative arrangements that typically are not available to more-educated white collar workers.

In a brighter vein, the influences of population density and per capita income support the existence of critical thresholds of these variables for the adoption of prepaid services. Further focused research in this area may indicate the values of density and income necessary to support prepayment in the group practice setting.

The effects of entry and DO/Pop, two measures reasonably construed to reflect the demand for nontraditional physician services, support earlier research (Roemer et al., 1974; Freshnock and Goodman, 1979) and indicate the importance of the nontraditional demand concept. Unfortunately, there is little beyond Roemer's frontier development theory to suggest how this demand is created and, more importantly, how it might be manipulated by policy. This study does indicate that three hypotheses are not strongly supported:

1) Factors influencing demand for general physician services also influence the demand for prepaid services

2) Prepayment strength is a function of available alternative supplies of medical care in the area, and,

3) Prepayment is strong in areas with many medical resources and/or support facilities.

Furthermore, this analysis supports the view that the initial success of prepaid physician services in an area previously without such services is critical and may be influenced by factors unrelated to subsequent growth and development.

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Part II
Selected Socioeconomic Data on Health

Characteristics of the United States Population

An essential element in an analysis of the health services delivery system is a description of the individuals who demand and receive these services: the consumers of health care. Such a description should encompass both demographic and health characteristics of the population.

Each member of the population is a potential consumer of health care services. Theoretically, demand is generated only by individuals. However, organized third parties such as insurance individuals, also exert pressure on the demand for health care services. The rising trend in demand for health care services can be partially attributed to such factors as population growth, changes in the age and race composition of the population, increased awareness regarding health and the ability of the medical profession to provide expanded and improved services. The most influential factors in the rising trend in demand, however, have been those which have enabled purchasers of medical care services to translate their wants into effective demand. Among these factors are increasing income, widespread comprehensive health insurance coverage, and the growth of government subsidies.

The following data provide a summary of the demographic characteristics of the population served by the U.S. health care delivery system.

- As of July 1, 1977, the total U.S. population was estimated at 216,333,000. This figure represents a 6.1 percent increase over the 1970 population estimate.
- Females accounted for 111,093,000 persons or 51.7 percent of the U.S. population in 1977.
- The median age of the U.S. population was 30.3 in 1977, up from 28.2 year in 1970.
- The population 65 years of age and over increased from 19,972,000 in 1970 to 23,493,000 in 1977, representing an increase of 15.0 percent.
- The population under 5 years of age is the only segment of the population which has shown a steady decrease in number since 1960, decreasing 25.1 percent between 1960 and 1977.
- The nonwhite population numbered 28,968,000 as of July 1, 1977 or 13.4 percent of the U.S. population. Females accounted for 52.3 percent of the total nonwhite populace.
- Persons of Spanish origin numbered 11,268,000 as of March 1977 or approximately 5.2 percent of the total U.S. population.
- The percentage of households with incomes under $3,000 decreased from 12.1 percent in 1970 to 7.3 percent in 1977.

- In 1977, the median income of white families was $14,276. Black families had a median income of $8,922.
- Between 1975 and 1977 median income of black families increased by $143, while the median income for white families increased by $8.

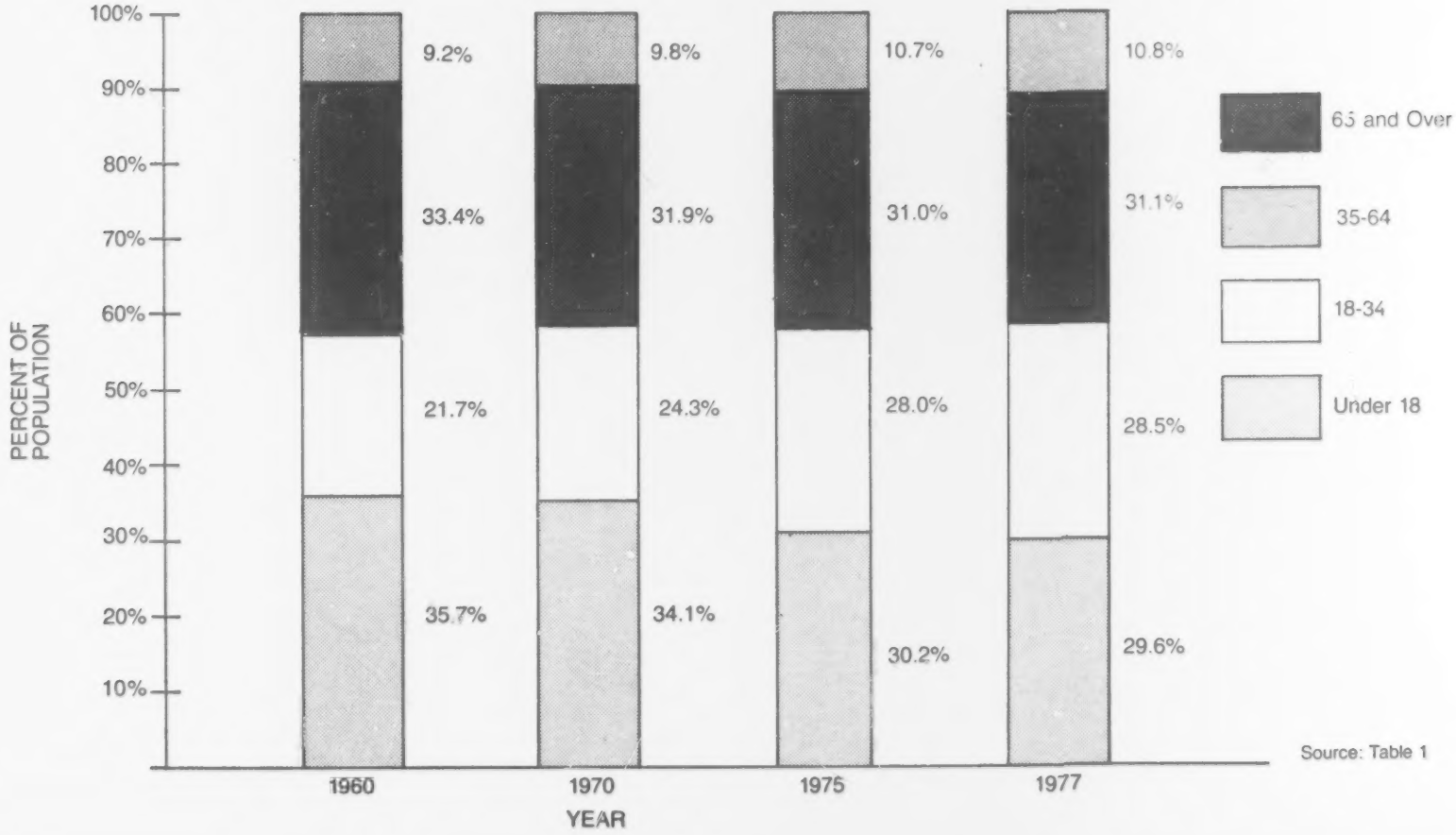
Table 1—Age of Population, Percent Distribution, and Rate of Change, 1960, 1970 and 1977

Age (years)	Population (thousands)			Percent Distribution			Change 1970 to 1977	
	April 1, 1960	April 1, 1970	July 1, 1977	April 1, 1960	April 1, 1970	July 1, 1977	Number	Percent
	180,671	204,335	216,817	100.0%	100.0%	100.0%	+12,482	+ 6.1
Under 5	20,341	17,163	15,236	11.3	8.4	7.0	- 1,927	-11.2
5 to 13	32,965	36,675	32,227	18.2	17.9	14.9	- 4,448	-12.1
14 to 17	11,219	15,854	16,783	6.2	7.8	7.7	+ 929	+ 5.9
18 to 24	16,128	24,455	28,602	8.9	12.0	13.2	+ 4,147	+17.0
25 to 34	22,919	25,146	33,149	12.7	12.3	15.3	+ 8,003	+31.8
35 to 44	24,221	23,214	23,543	13.4	11.4	10.9	+ 329	+ 1.4
45 to 54	20,578	23,254	23,389	11.4	11.4	10.8	+ 135	+ 0.6
55 to 64	15,625	18,603	20,395	8.6	9.1	9.4	+ 1,792	+ 9.6
65 and over	16,675	19,972	23,494	9.2	9.8	10.8	+ 3,522	+17.6

Sources: Estimates of the Population of the United States, by Age, Sex, and Race: April 1, 1960 to July 1, 1974. Current Population Reports Series P-25, No. 529, September 1974:1.

Estimates of the Population of the United States, by Age, Sex, and Race: 1970 to 1977. Current Population Reports Series P-25, No. 721, April 1978:2.

Figure 1—Percentage Distribution of the Population by Age, 1960, 1970, 1975 and 1977



Source: Table 1

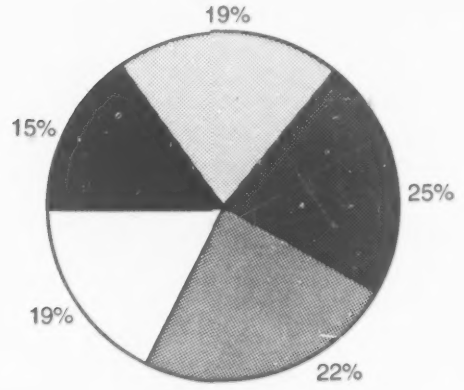
Table 2—United States Population by Age, Race and Sex, 1977

Age (years)	Number (thousands)				Percent			
	White		Black and Other		White		Black and Other	
	Male	Female	Male	Female	Male	Female	Male	Female
All ages	91,429	95,936	13,811	15,157	100%	100%	100%	100%
Under 5	6,424	6,111	1,366	1,334	7	6	10	9
5 to 9	7,293	6,958	1,468	1,451	8	7	11	10
10 to 14	8,200	7,843	1,590	1,568	9	9	12	10
15 to 19	9,059	8,785	1,630	1,630	10	9	11	11
20 to 24	8,557	8,463	1,371	1,491	9	9	10	10
25 to 34	14,354	14,364	1,958	2,309	16	15	14	15
35 to 44	10,092	10,402	1,348	1,641	11	11	10	11
45 to 54	10,085	10,639	1,234	1,424	11	11	9	9
55 to 64	8,738	9,681	911	1,065	9	10	7	7
65 and over	8,635	12,681	934	1,243	9	13	7	8
Median Age	29.0	31.6	23.1	25.4	--	--	--	--

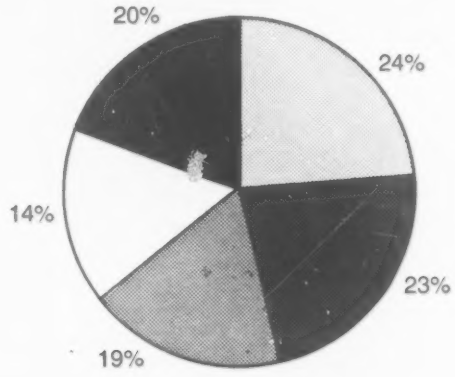
Note: Data are estimates of resident population as of July 1, 1976.

Source: Estimates of Population of the United States by Age, Sex, and Race: 1970 to 1977. Current Population Reports Series P25, No. 721, April 1978:17

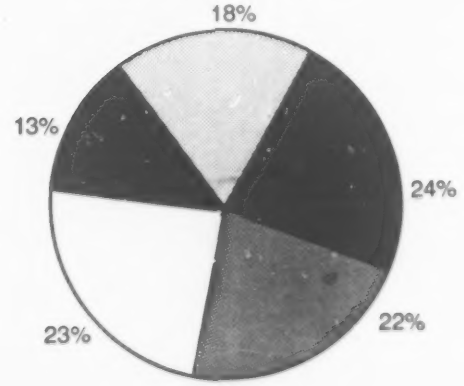
Figure 2—Percentage Distribution of United States Population by Age, Race and Sex, 1977



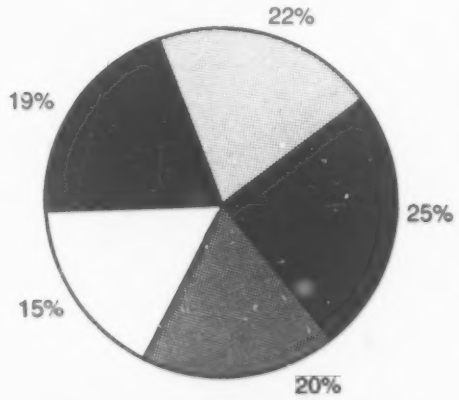
WHITE MALE POPULATION



BLACK MALE POPULATION



WHITE FEMALE POPULATION



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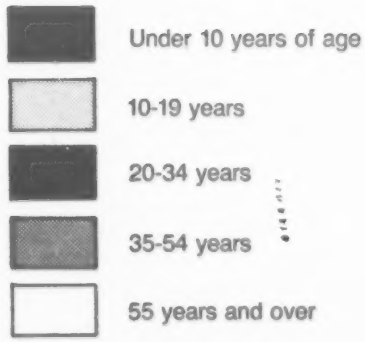


Source: Table 2

Table 3—Age Distribution of Persons of Spanish Origin in the United States, March 1977

Age (years)	Spanish Origin							
	Total		Mexican		Puerto Rican		Other Spanish[a]	
	Male	Female	Male	Female	Male	Female	Male	Female
Total Persons (thousands)	5,486	5,782	3,223	3,332	809	934	1,455	1,525
Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Under 5	13.1	11.7	13.9	12.6	13.1	12.6	11.0	9.0
5 to 9	13.1	11.4	12.7	11.5	16.3	14.3	12.2	18.7
10 to 13	9.5	9.1	9.6	9.4	10.3	9.7	8.9	11.1
14 to 19	13.2	12.5	13.0	14.1	12.3	10.2	13.3	8.5
20 to 24	8.1	10.0	10.2	10.5	8.5	8.9	8.5	8.1
25 to 29	7.8	8.4	8.6	8.0	6.7	10.7	6.6	9.1
30 to 34	6.9	7.2	6.9	6.8	6.4	8.1	7.2	13.3
35 to 44	10.6	11.8	10.2	11.3	11.5	11.3	9.7	9.9
45 to 54	8.0	8.4	7.0	7.4	7.6	7.5	10.2	7.2
55 to 64	4.8	5.1	4.5	4.6	4.7	3.5	5.7	7.2
65 to 74	2.6	3.1	2.3	2.5	1.8	2.6	3.8	4.6
75 and over	1.3	1.3	0.7	1.3	0.7	0.5	1.6	1.8
Median Age	20.6	22.6	18.9	21.5	18.9	21.5	27.7	27.6

[a]Includes persons of Cuban, Central or South American, and other Spanish origin.

Source: Persons of Spanish Origin in the United States: March 1977. Current Population Reports P-20, No. 329, September 1978:20

Morbidity and Mortality of the U.S. Population

Morbidity and mortality rates are frequently cited as indicators of the health status of the population. With economic and social improvements as well as advancements in medical technology, death rates have continued to decline and life expectancy for the general population has increased. Between 1920 and 1976 life expectancy for males has increased by approximately 16 years and 22 years for females. People who would have died of certain communicable diseases a number of years ago are living longer but are now susceptible to degenerative diseases. This fact is reflected in an increase in the morbidity rates. Therefore, although life may be substantially prolonged, longevity often may be accompanied by severe disability. In addition, those persons suffering from chronic conditions are more susceptible to acute illnesses. These developments account for part of the increase in morbidity rates and also explain selected increased demand for medical care.

Highlights of selected health status indicators are:

- The average length of life for the U.S. population has increased 6.3 percent since 1950; from 68.2 years in 1950 to 72.8 years in 1976. In 1976, females had a life expectancy 7.7 years greater than males.
- In 1977, white males had an average length of life of 69.7 years, while males of all other races had an estimated average of 64.1 years. White females had an estimated average of 76.7 years, while females of all other races had an average length of life of 72.6 years.
- In 1977, the death rate for the U.S. population was 8.8 per 1,000 population.
- Heart disease was still the leading cause of death in 1977, accounting for 331.6 deaths per 100,000 population or 37.8 percent of all deaths.
- In 1977, the Middle Atlantic Census Division had the highest death rate due to heart disease (398.1 per 100,000 population) while the Mountain Census Division had the lowest (233.9 per 100,000 population).
- Data on days of disability per person in 1977 indicate that an average individual had 17.8 days of restricted activity, 6.9 days of bed disability, and 5.0 work-loss days per year.
- The number of restricted activity and bed disability days per person decreases as income increases.

Table 4—Households by Total Household Income and Race of Household Head, 1970 and 1977

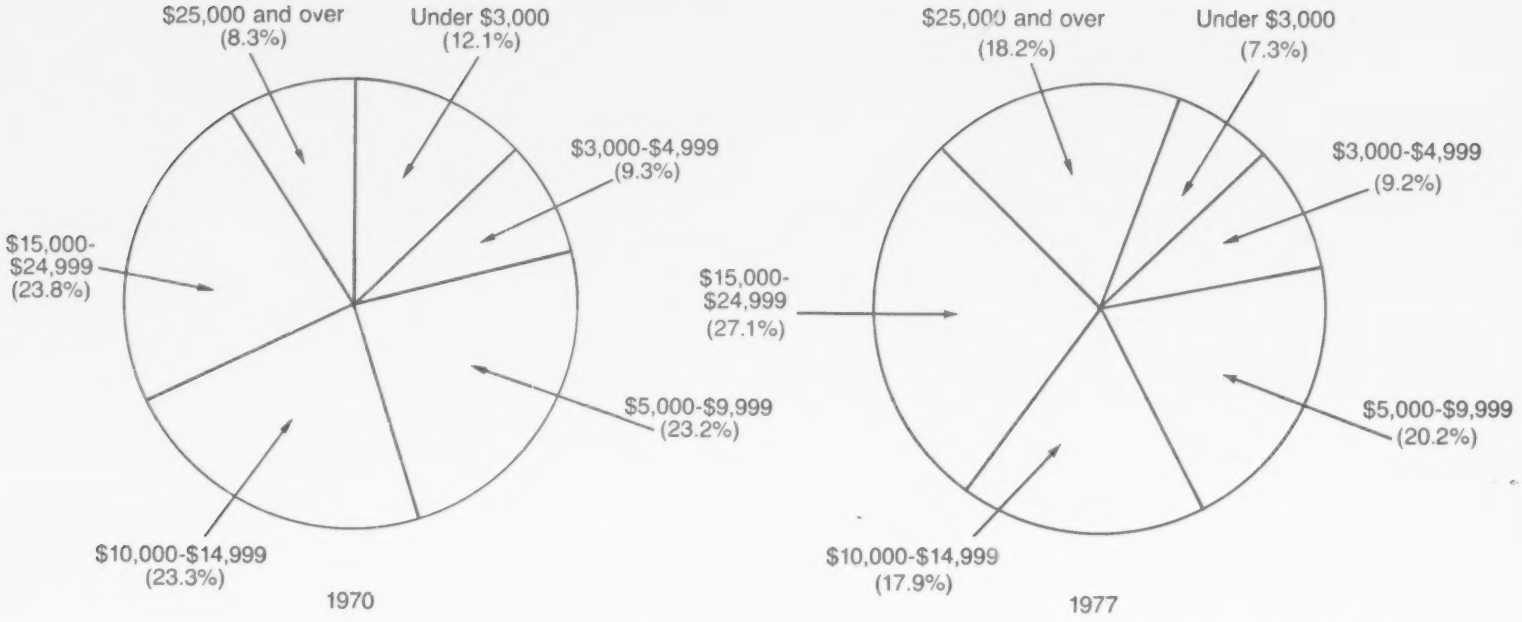
Total Household Income	1970[a]			1977		
	All Races	White	Black and Other	All Races	White	Black and Other
Number Persons (thousands)	64,778	57,575	6,800	76,030	86,934	9,095
Percent	100.0	100.0	100.0	100.0	100.0	100.0
Under $3,000	12.1	11.0	21.2	7.3	6.3	14.5
$3,000 to $4,999	9.3	8.7	14.4	9.2	8.5	14.1
$5,000 to $6,999	9.2	8.8	13.0	8.5	8.0	12.5
$7,000 to $9,999	14.0	13.8	16.3	11.7	11.4	14.0
$10,000 to $11,999	9.9	10.1	8.5	7.2	7.2	7.5
$12,000 to $14,999	13.4	13.8	9.6	10.7	10.9	9.6
$15,000 to $24,999	23.8	25.0	13.9	27.1	28.3	19.1
$25,000 and over	8.3	8.9	3.2	18.2	19.4	8.8
Median Income	$11,092	$11,552	$7,266	$13,572	$14,276	$8,922

Note: In current dollars. Households as of March the following year.

[a]For 1970, the number of households by race will not add to all races because the latter was adjusted to population controls based on the 1970 census. The controls are not available by race.

Source: Money Income in 1977 of Households in the United States. Current Population Reports Series P-60, No. 117, December 1978:7

Figure 3—Percentage Distribution of U.S. Households by Income, 1970 and 1977



Source: Table 4

Table 5—Median Income of Families by Type of Residence and Race, 1976

Type of Residence	All Families		White Families		Black Families	
	Number (000)	Median Income	Number (000)	Median Income	Number (000)	Median Income
United States	56,710	$14,958	50,083	$15,537	5,804	$ 9,242
Metropolitan Areas	37,955	16,001	32,934	16,767	4,389	9,984
1,000,000 or more	21,637	16,771	18,311	17,693	2,912	10,561
In central cities	8,144	13,700	5,747	15,083	2,147	9,850
Outside central cities	13,492	18,419	12,563	18,778	765	12,343
Under 1,000,000	16,318	15,154	14,623	15,646	1,476	9,085
In central cities	7,384	14,198	6,176	15,089	1,093	8,294
Outside central cities	8,934	15,908	8,447	16,068	383	11,414
Nonmetropolitan Areas	18,755	12,831	17,149	13,318	1,416	7,435
Non-farm	16,978	13,004	15,475	13,504	1,325	7,668
Farm	1,778	10,863	1,674	11,288	90	5,136

Source: Money Income in 1976 of Families and Persons in the United States. Current Population Reports Series P60, No. 114, July 1978:63-66.

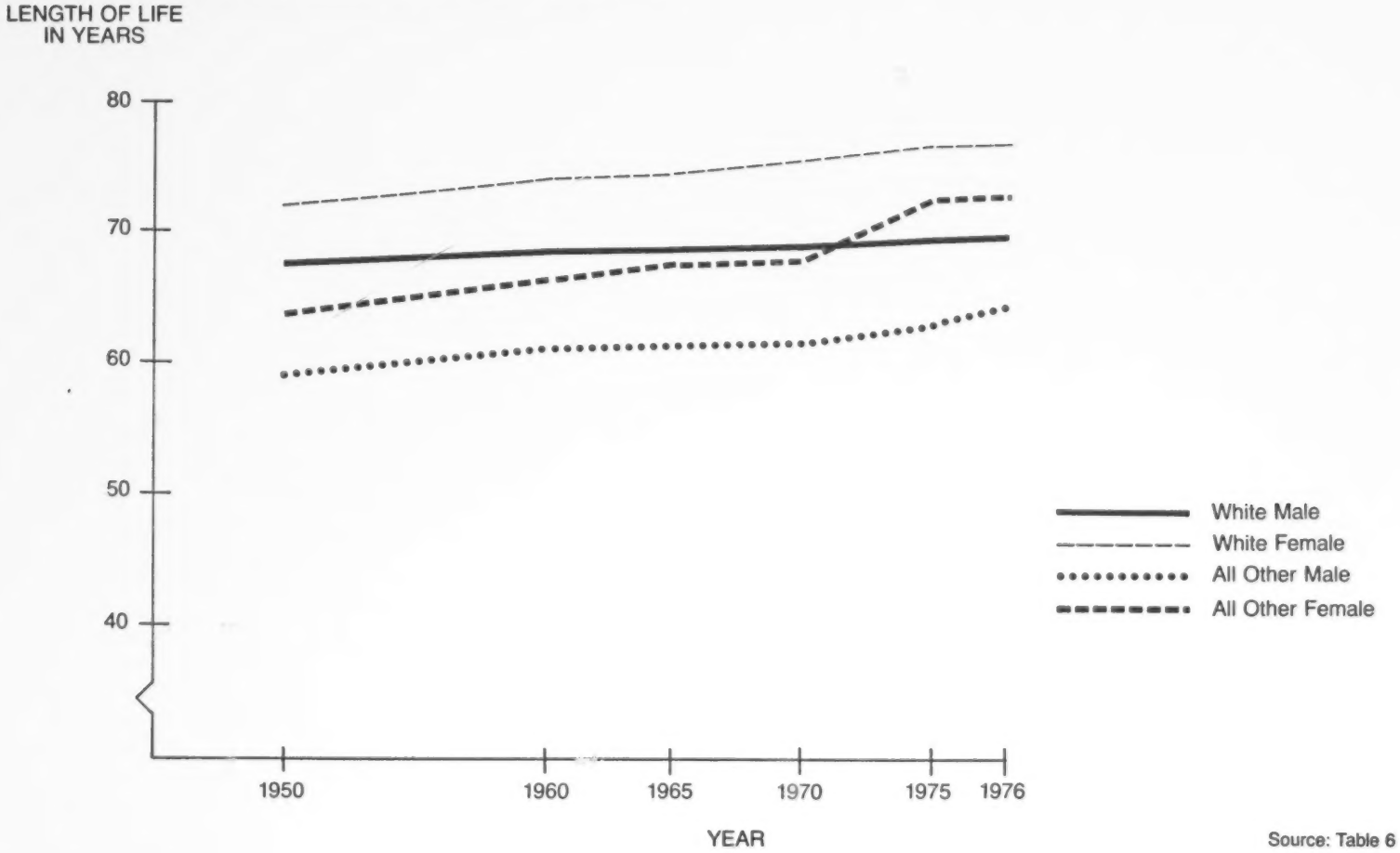
Table 6—Estimated Average Length of Life in Years, by Race and Sex, Selected Years 1950-1976

Year	Total			White			All Other		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
1950	68.2	65.6	71.1	69.1	66.5	72.2	60.8	59.1	62.9
1960	69.7	66.6	73.1	70.6	67.4	74.1	63.6	61.1	66.3
1961	70.2	67.0	73.6	71.0	67.8	74.5	64.4	61.9	67.0
1962[a]	70.0	66.8	73.4	70.9	67.6	74.4	64.1	61.5	66.8
1964	70.2	66.9	73.7	71.0	67.7	74.6	64.1	61.1	67.2
1965	70.2	66.8	73.7	71.0	67.6	74.7	64.1	61.1	67.4
1966	70.1	66.7	73.8	71.0	67.6	74.7	64.0	60.7	67.4
1967	70.5	67.0	74.2	71.3	67.8	75.1	64.6	61.1	68.2
1968	70.2	66.6	74.0	71.1	67.5	74.9	63.7	60.1	67.5
1969	70.4	66.8	74.3	71.3	67.8	75.1	64.3	60.5	68.4
1970	70.9	67.1	74.8	71.7	68.0	75.6	65.3	61.3	69.4
1971	71.1	67.4	75.0	72.0	68.3	75.8	65.6	61.6	69.7
1973	71.3	67.6	75.3	72.2	68.4	76.1	65.9	61.9	70.1
1974	71.9	68.2	75.9	72.7	68.9	76.6	67.0	62.9	71.2
1975	72.5	68.7	76.5	73.2	69.4	77.2	67.9	63.6	72.3
1976	72.8	69.0	76.7	73.5	69.7	77.3	68.3	64.1	72.6

[a]Figures by race exclude data for residents of New Jersey.

Sources: National Center for Health Statistics: Vital Statistics of the United States, 1976: Life Tables; Hyattsville, M.D.: U.S. Department HEW, 1978:15

Figure 4—Estimated Average Length of Life in Years by Race and Sex, 1950-1976



Source: Table 6

Table 7—Average Expectation of Life in Years at Specified Ages by Race and Sex, Selected Years 1939-1976

Race and Year	Male					Female				
	At Birth	Age 20	Age 40	Age 50	Age 65	At Birth	Age 20	Age 40	Age 50	Age 64
White										
1939-1941	62.8	47.8	30.0	22.0	12.1	67.3	51.4	33.3	24.7	13.6
1949-1951	66.3	49.5	31.2	22.8	12.8	72.0	54.6	35.6	26.8	15.0
1959-1961	67.6	50.3	31.7	23.2	13.0	74.2	56.3	37.1	28.1	15.9
1969-1971	67.9	50.2	31.9	23.3	13.0	75.5	57.2	28.1	29.1	16.9
1974	68.9	51.0	32.6	24.0	13.4	76.6	58.1	38.9	29.8	17.6
1975	69.4	51.4	33.0	24.3	13.7	77.2	58.6	39.4	30.3	18.1
1976	69.7	51.6	33.1	24.4	13.7	77.3	58.7	39.5	30.4	18.1
All Other										
1939-1941	52.3	39.7	25.2	19.2	12.2	55.5	42.1	27.3	21.0	14.0
1949-1951	58.9	43.7	27.3	20.3	12.8	62.7	46.8	29.8	22.7	14.5
1959-1961	61.5	45.8	28.7	21.3	12.8	66.5	50.1	32.2	24.3	15.1
1969-1971	61.0	44.4	28.3	21.2	12.9	69.1	51.9	33.9	26.0	16.0
1974	62.9	45.7	29.3	22.0	13.4	71.2	53.5	35.3	27.1	16.7
1975	63.6	46.3	29.8	22.4	13.7	72.3	54.7	36.2	27.9	17.5
1976	64.1	46.8	30.0	22.5	13.8	72.6	54.9	36.4	28.0	17.6

Source: U.S. Bureau of the Census: Statistical Abstract of the United States, 1978. Government Printing Office, 1978:69.

Table 8—Estimated Deaths by Age, Race and Sex, 1977

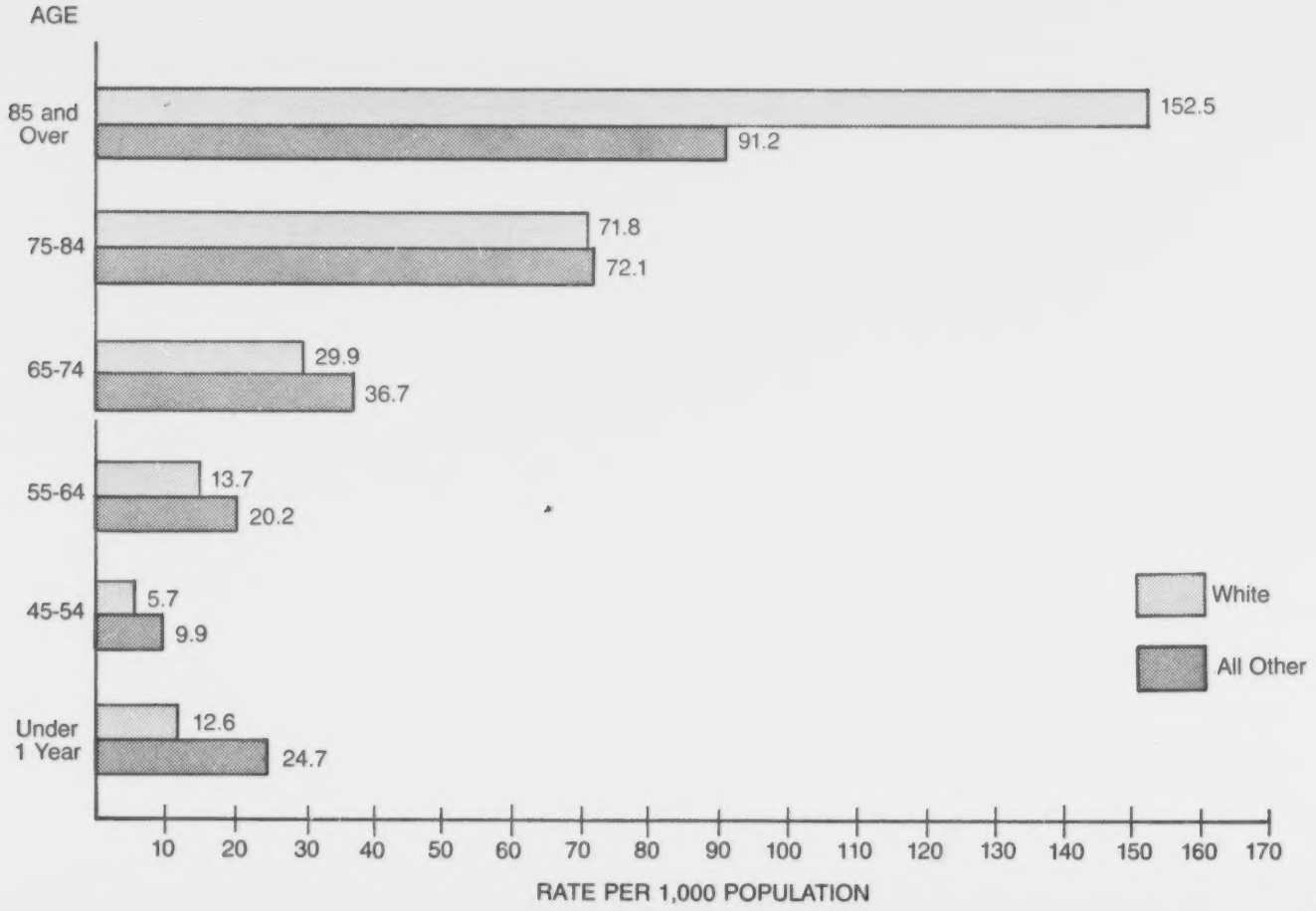
Age (years)	Total			White			All Other		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
All ages[a]	8.8	10.0	7.7	8.9	10.0	7.8	7.9	9.5	6.5
Under 1	14.7	16.6	12.8	12.6	14.4	10.8	24.7	27.1	22.3
1 to 4	0.7	0.8	0.6	0.7	0.8	0.5	0.9	1.0	.8
5 to 14	0.4	0.5	0.3	0.3	0.5	0.2	0.4	0.6	0.3
15 to 24	1.2	1.8	0.6	1.1	1.7	0.6	1.4	2.3	0.7
25 to 34	1.4	2.0	0.8	1.2	1.7	0.7	2.5	3.9	1.4
35 to 44	2.5	3.2	1.7	2.1	2.8	1.5	4.8	6.8	3.2
45 to 54	6.2	8.1	4.3	5.7	7.5	3.9	9.9	12.6	7.5
55 to 64	14.3	19.2	9.9	13.7	18.5	9.4	20.2	26.2	15.0
65 to 74	30.6	42.4	21.5	29.9	41.9	20.7	36.7	46.2	29.1
75 to 84	71.8	94.1	58.3	71.8	94.6	58.1	72.1	88.6	60.2
85 and over	146.4	170.9	135.2	152.5	178.9	140.5	91.2	106.1	83.0

Note: Based on a 10 percent sample of deaths. Rates per 1,000 population in specified group.

[a]Figures for age not stated included in "All ages" but not distributed among age groups.

Source: Annual Summary for the United States, 1977. Monthly Vital Statistics Report, 26:23-24, December 7, 1978:2324.

Figure 5—Death Rates per 1,000 Population for Selected Age Groups by Race, 1977



Source: Table 8

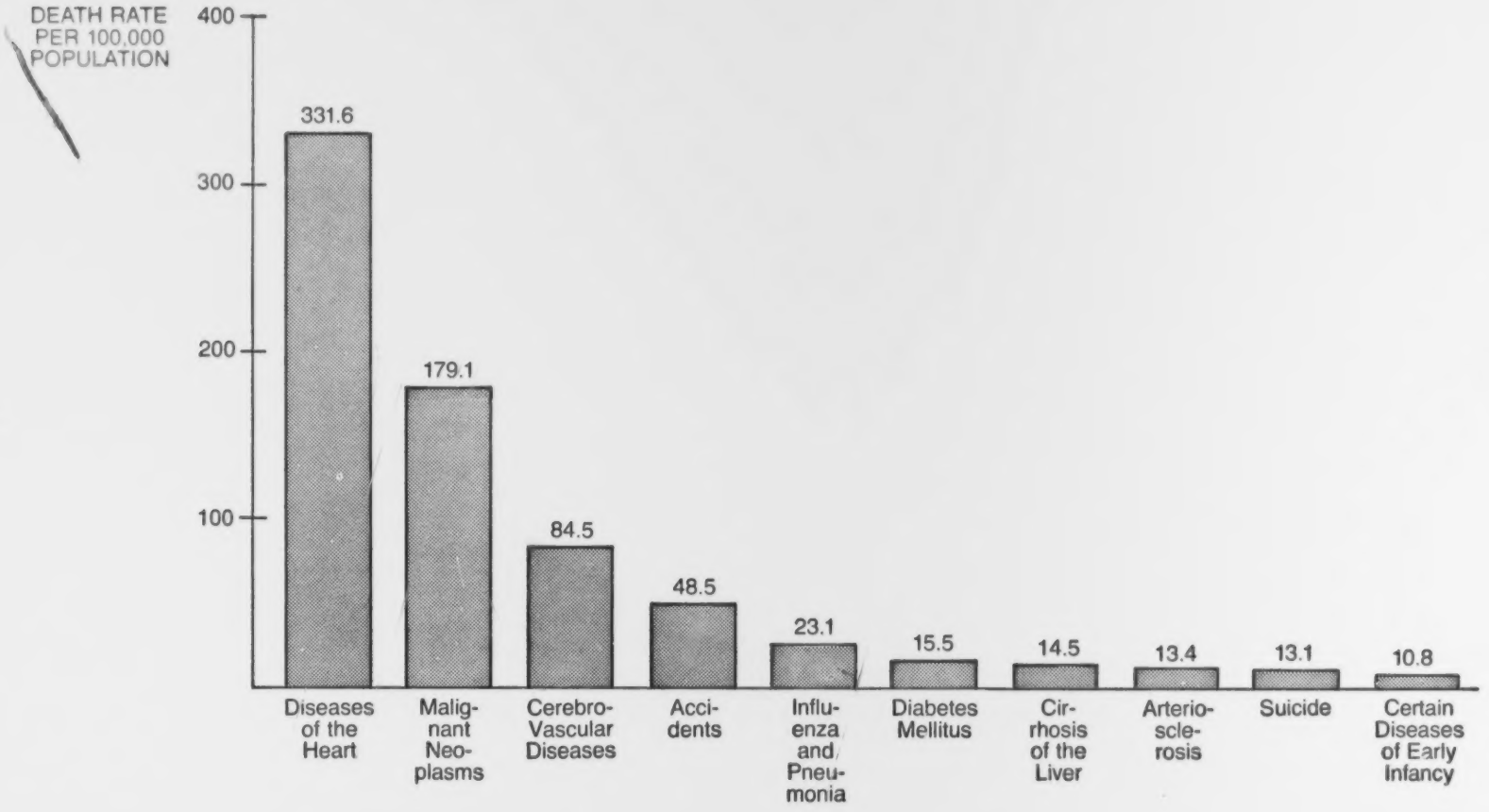
Table 9—Estimated Death Rates per 100,000 Population for the 15 Leading Causes of Death, 1976 and 1977

Cause of Death	1976 Rank	1976 Death Rate	1976 Percent Total of Deaths	1977 Rank	1977 Death Rate	1977 Percent of Total Deaths
All Causes		890.8	100.0%		877.4	100.0%
Diseases of heart	1	338.6	38.0	1	331.6	37.8
Malignant neoplasms	2	174.6	19.6	2	179.1	20.4
Cerebrovascular diseases	3	88.1	9.9	3	84.5	9.6
Accidents	4	46.8	5.3	4	48.5	5.5
Influenza and pneumonia	5	29.3	3.3	5	23.1	2.6
Diabetes mellitus	6	16.3	1.8	6	15.5	1.8
Cirrhosis of liver	7	14.5	1.6	7	14.5	1.7
Arteriosclerosis	8	13.4	1.5	8	13.4	1.5
Certain causes of mortality in early infancy	9	11.7	1.3	10	10.8	1.5
Suicide	10	11.6	1.3	9	13.1	1.2
Bronchitis, emphysema and asthma	11	11.1	1.2	11	10.3	1.2
Homicide	12	8.8	1.0	12	9.7	1.1
Congenital anomalies	13	6.4	0.7	13	5.8	0.7
Nephritis and nephrosis	14	4.1	0.5	14	3.8	0.4
Peptic ulcer	15	3.0	0.3	--	--	--
Septicemia	--	--	--	15	3.4	0.4
All other causes	--	112.4	12.6	--	110.3	12.6

Note: Based on a 10 percent sample of deaths. Rates per 100,000 population.

Source: Annual Summary for the United States. Monthly Vital Statistics Report, 25:3 December 12, 1977; 26:3 December 7, 1978.

Figure 6—Estimated Death Rate per 100,000 Population for the 10 Leading Causes of Death, 1977



Source: Table 9

Table 10—Death Rates per 100,000 Population for the 10 Leading Causes of Death by Census Division, 1976

Census	Heart Dis. a	Malig. Neop. b	Vasc. Dis. c	Acci-dents d	Infl.& Pneu. e	Diabe-tes f	Cirrh. of Liv. g	Arteri-oscler. h	Sui-cide i	Dis. of Infan. j
United States	337.2	175.8	87.9	46.9	28.8	16.1	14.7	13.7	12.5	11.6
New England	357.2	195.6	82.2	36.8	38.1	17.3	15.5	16.0	10.3	7.9
Middle Atlantic	398.1	200.8	79.9	34.6	31.6	19.0	18.3	12.1	9.6	11.1
East No. Central	352.8	174.9	87.9	42.8	25.2	17.6	13.8	15.0	11.6	11.8
West No. Central	357.4	179.5	101.6	52.0	36.4	16.1	9.6	18.0	11.2	11.1
South Atlantic	333.0	175.0	91.2	50.2	25.8	15.9	15.5	12.1	13.9	12.5
East So. Central	334.2	167.0	113.2	58.7	27.6	15.8	9.4	12.9	11.6	14.2
West So. Central	303.7	162.4	92.8	54.9	29.1	16.3	11.1	14.2	11.9	14.3
Mountain	233.9	132.4	63.5	61.7	30.3	11.9	13.5	12.3	17.4	12.2
Pacific	282.5	163.6	81.3	49.9	25.4	11.3	18.1	12.7	16.7	9.0

a-Diseases of Heart
b-Includes neoplasms of lymphatic & hematopoietic tissues
c-Cerebrovascular diseases
d-Accidents
e-Influenza and pneumonia
f-Diabetes mellitus
g-Cirrhosis of liver
h-Arteriosclerosis
i-Suicide
j-Certain diseases of early infancy

Source: U.S. Bureau of Census: Statistical Abstract of the United States, 1978. Government Printing Office, 1978:76.

Table 11—Days of Disability per Person per Year by Sex and Age, 1975 and 1977

Sex and Age	Days of Disability Per Person Per Year					
	Restricted Activity		Bed Disability		Work Loss	
	1975	1977	1975	1977	1975	1977
Both Sexes -- all ages	17.9	17.8	6.6	6.9	5.2	5.0
Under 17 years	11.0	11.2	4.4	4.5	a	a
17 to 24 years	12.3	10.5	5.1	3.4	4.6	4.1
25 to 44 years	15.6	13.5	5.8	4.3	5.1	4.4
45 to 64 years	24.2	22.0	8.4	7.2	5.8	5.5
65 years and over	38.4	33.0	12.9	12.7	4.3	5.0
Male -- all ages	15.6	15.8	5.4	5.8	4.9	4.7
Under 17 years	10.9	11.1	4.2	5.1	a	a
17 to 24 years	10.2	10.5	3.4	3.4	4.4	4.1
25 to 44 years	13.0	13.5	4.3	4.3	4.7	4.4
45 to 64 years	22.0	22.0	7.1	7.2	5.5	5.5
65 years and over	34.3	33.0	12.2	12.7	5.1	5.0
Female -- all ages	20.0	19.6	7.6	7.9	5.7	5.3
Under 17 years	11.1	11.4	4.6	5.3	a	a
17 years to 24 years	14.3	12.5	6.7	5.6	4.8	4.5
25 to 44 years	18.1	17.9	7.2	7.4	5.9	5.2
45 to 64 years	26.2	26.5	9.6	9.0	6.2	6.4
65 years and over	41.4	38.9	13.4	15.8	--	--

[a]Work loss reported for currently employed persons aged 17 and over.

Source: Current Estimates from the Health Interview Survey - United States - 1977, Vital and Health Statistics Series 10, No. 126, September 1978:22

Table 12—Days of Restricted Activity and Bed Disability per Person by Age and Family Income, 1975

Age	All Incomes[a]	Family Income: Less than $3,000	$3,000 $4,999	$5,000 $6,999	$7,000 $9,999	$10,000 $14,999	$15,000 or more
		Days of restricted activity per person per year					
All Ages	17.9	36.9	28.6	23.6	17.6	14.4	12.4
Under 6 years	12.1	16.8	11.1	14.4	11.0	11.9	11.1
6 - 16 years	10.5	12.2	13.4	11.4	9.6	10.4	10.4
17 - 24 years	12.3	17.0	14.5	16.1	14.5	11.9	8.8
25 - 44 years	15.6	35.7	28.3	23.5	17.3	13.3	11.9
45 - 64 year	24.2	67.8	39.9	34.6	26.4	19.6	15.7
65 years and over	38.4	53.9	45.8	37.3	28.7	31.1	23.5
		Days of bed disability per person per year					
All Ages	6.6	13.4	9.9	8.6	6.6	5.3	4.6
Under 6 years	4.7	5.1	5.4	5.1	4.8	4.4	4.4
6 - 16 years	4.3	6.0	4.7	5.3	4.0	3.9	4.4
17 - 24 years	5.1	6.9	5.9	6.6	5.6	4.8	3.9
25 - 44 years	5.8	14.9	10.3	9.1	6.3	5.3	4.2
45 - 64 years	8.4	25.5	13.1	12.1	9.8	6.6	5.1
65 years and over	12.9	17.0	15.0	11.9	9.3	11.4	8.8

Note: No more recent data is available

[a]Includes unknown income.

Source: Disability Days United States, 1975. Vital and Health Statistics Series 10, No. 118, June 1978:28, 29.

Infant and Maternal Mortality in the United States

The U.S. infant mortality rate is regarded as a key indicator of the level of health of the population, and by implication, as a measure of the effectiveness of the nation's health care delivery system. The following data summarize the United States infant and maternal mortality experience:

- The 1977 estimated infant mortality rate for the U.S. was 14.0 per 1,000 live births. This represents a 52.1 percent decrease from 1950 when the rate was 29.2 per 1,000 live births. It also represents a 13.1 percent decrease from 1975 when the rate was 16.1 per 1,000 live births.
- The infant mortality rate for the white population in 1977 was substantially lower (12.4 per 1,000 live births) than for other races (21.1 per 1,000 live births).
- The East South Central Census Division had the highest infant mortality rate in the country in 1977 (15.5 per 1,000 live births), while the New England and Pacific Divisions had the lowest (10.6 and 11.9 per 1,000 live births, respectively).
- In 1977 Maine had the lowest infant mortality rate (8.6 per 1,000 live births), while the District of Columbia had the highest rate (23.0 per 1,000 live births).
- The maternal mortality rate decreased from 22.2 per 100,000 live births in 1969 to 14.6 per 100,000 live births in 1973.
- The maternal mortality rate for white females in 1973 was 10.0 per 100,000 live births, while the rate for females of all other races was 35.1 per 100,000 live births.

Table 13—Infant Mortality Rates by Age and Race. Selected Years 1950-1977

Year	Total			White			All Other		
	Under 1 Year	28 Day to 11 Months	Under 28 Days	Under 1 Year	28 Days to 11 Months	Under 28 Days	Under 1 Year	28 Days to 11 Months	Under 28 Days
1950	29.2	8.7	20.5	26.8	7.4	19.4	44.5	16.9	27.5
1960	26.0	7.3	18.7	22.9	5.7	17.2	43.2	16.4	26.9
1965	24.7	7.0	17.7	21.5	5.4	16.1	40.3	14.9	25.4
1967	22.4	5.9	16.5	19.7	4.7	15.0	35.9	12.1	23.8
1968	21.8	5.7	16.1	19.2	4.5	14.7	34.5	11.6	23.0
1969	20.9	5.3	15.6	18.4	4.2	14.2	32.9	10.4	22.5
1970	20.0	4.9	15.1	17.8	4.0	13.8	30.9	9.5	21.4
1971	19.1	4.9	14.2	17.1	4.0	13.0	28.5	8.9	19.6
1972[a]	18.5	4.8	13.6	16.4	4.0	12.4	27.7	8.5	19.2
1973	17.7	4.8	13.0	15.8	3.9	11.8	26.2	8.3	17.9
1974	16.7	4.4	12.3	14.8	3.7	11.1	24.9	7.7	17.2
1975	16.1	4.5	11.6	14.2	3.8	10.4	24.2	7.5	16.8
1976	15.1	4.4	10.7	13.4	3.9	9.5	22.1	6.7	15.4
1977[b]	14.0	4.2	9.8	12.4	3.7	8.7	21.0	6.5	14.5

Note: Rates per 1,000 live births.

[a]Based on 50 percent sample of deaths.

[b]Estimate.

Source: Annual Summary for the United States, 1976. Monthly Vital Statistics Report 26:10, December 7, 1978.

Figure 7—Infant Mortality Rates by Race, Selected Years 1950-1977

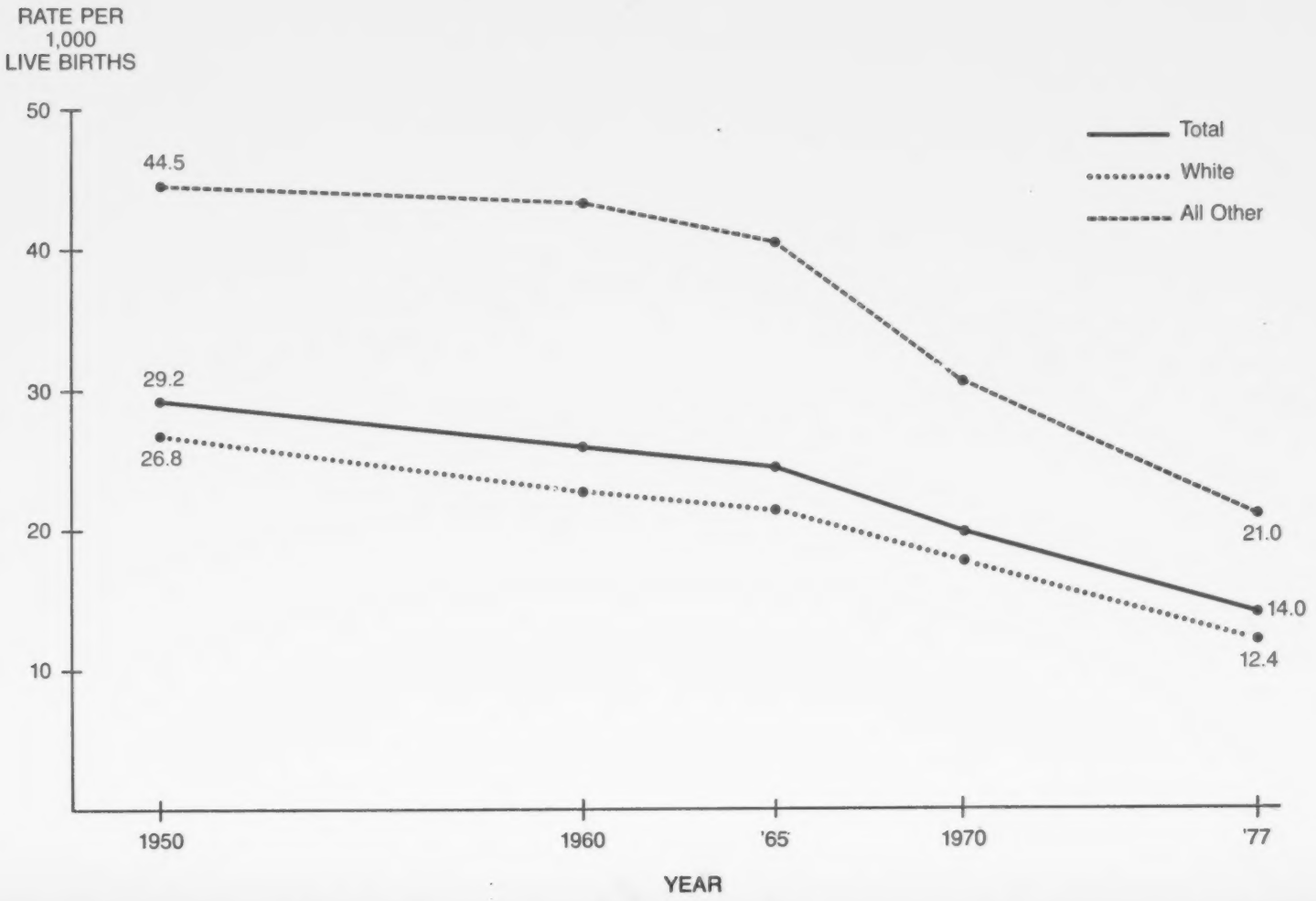


Table 14—Infant Mortality Rates by Region and State, 1970 and 1977

Region State	Infant Mortality Rate		Region State	Infant Mortality Rate		Region State	Infant Mortality Rate	
	1970	1977		1970	1977		1970	1977
New England	16.8	10.6	Missouri	19.1	16.1	West So. Central	21.7	15.3
Maine	17.2	8.6	North Dakota	14.1	13.2	Arkansas	20.4	13.9
New Hampshire	17.8	9.0	South Dakota	19.8	15.4	Louisiana	25.1	18.3
Vermont	17.1	10.0	Nebraska	17.3	11.7	Oklahoma	20.3	14.2
Massachusetts	16.4	9.6	Kansas	17.6	12.0	Texas	21.1	14.7
Rhode Island	18.7	14.7	South Atlantic	22.0	15.5	Mountain	19.0	12.8
Connecticut	16.5	12.9	Delaware	19.4	11.7	Montana	21.7	12.5
Middle Atlantic	19.8	15.0	Maryland	19.4	12.4	Idaho	16.3	9.0
New York	19.8	16.5	Dist. of Col.	27.0	23.0	Wyoming	18.9	10.5
New Jersey	19.0	13.3	Virginia	20.6	15.3	Colorado	20.3	13.3
Pennsylvania	20.1	13.9	West Virginia	22.8	14.5	New Mexico	21.1	13.8
East No. Central	19.5	14.0	North Carolina	23.9	16.8	Arizona	18.2	14.7
Ohio	18.4	14.0	South Carolina	22.6	17.6	Utah	15.3	11.8
Indiana	19.2	13.1	Georgia	21.4	14.2	Nevada	23.5	13.1
Illinois	21.4	15.8	Florida	21.7	15.3	Pacific	17.4	11.9
Michigan	20.1	13.7	East So. Central	23.0	15.5	Washington	18.9	11.8
Wisconsin	16.4	10.8	Kentucky	19.8	13.4	Oregon	16.9	12.5
West No. Central	17.9	13.1	Tennessee	21.3	16.5	California	17.1	11.8
Minnesota	16.8	11.3	Alabama	24.3	17.1	Alaska	22.1	14.2
Iowa	18.5	12.0	Mississippi	28.2	14.5	Hawaii	18.9	12.2

Note: Rates are deaths under 1 year per 1,000 live births.

Source: Annual Summary for the United States. Monthly Vital Statistics Report 19:14, September 21, 1971; 26:19, December 7, 1978.

Table 15—Infant Mortality Rates by Selected Causes, Selected Years 1965-1977

Causes of Death	1965	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977[a]
Total, under 1 year	24.7	22.4	21.8	20.7	19.8	19.2	18.5	17.7	16.7	16.1	15.1	14.0
Certain gastrointestinal diseases	0.6	0.4	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.2
Influenza and pneumonia	2.9	2.3	2.3	2.1	1.8	1.5	1.3	1.1	0.8	0.7	0.6	0.5
Congenital anomalies	3.6	3.3	3.2	3.2	2.9	2.8	2.9	2.7	2.7	2.7	2.6	2.4
Birth Injuries	2.1	1.9	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.5	0.4
Asphyxia or newborn, unspecified	4.1	3.6	2.9	2.7	2.6	2.4	2.1	1.7	1.5	1.3	1.1	0.9
Immaturity, unqualified	3.8	3.4	2.7	2.7	2.3	2.2	1.9	1.7	1.5	1.4	1.4	1.2
Other diseases of early infancy	3.9	4.0	6.2	5.8	6.0	5.9	5.8	5.6	5.5	5.2	4.7	4.5
All other causes	3.8	3.7	3.6	3.4	3.5	3.5	3.7	3.8	3.8	3.9	4.0	3.9

Note: For 1969-1971 and 1976 based on a 10 percent sample of deaths; for all other years based on final figures. Rates per 1,000 live births.

[a]Estimate.

Source: Annual Summary for the United States, Monthly Vital Statistics Report 19:5, September 21, 1971; 21:5, June 27, 1973; 26:11, December 7, 1978.

Table 16—Maternal Mortality Rates by Age and Race, 1969-1974

Age	1969			1973			1974		
	Total	White	All Other	Total	White	All Other	Total	White	All Other
Total	22.2	15.5	55.7	15.2	10.7	34.6	14.6	10.0	35.1
Under 20	17.7	10.0	36.7	12.6	6.5	26.7	11.3	7.1	21.3
20 - 24	13.1	9.9	31.3	9.3	7.3	18.2	10.0	6.1	28.0
25 - 29	17.0	13.0	45.9	13.1	10.6	29.8	12.6	8.7	38.3
30 - 34	34.9	23.3	100.1	26.2	17.5	74.2	24.1	16.1	69.8
35 - 39	69.6	47.8	173.9	44.2	27.2	117.5	40.6	30.3	84.3
40 - 44	119.3	78.7	298.7	78.5	55.3	167.6	86.1	81.6	102.9
45 and over[b]	176.5	73.2	600.6	154.5	66.9	447.4	233.8	226.1	260.4

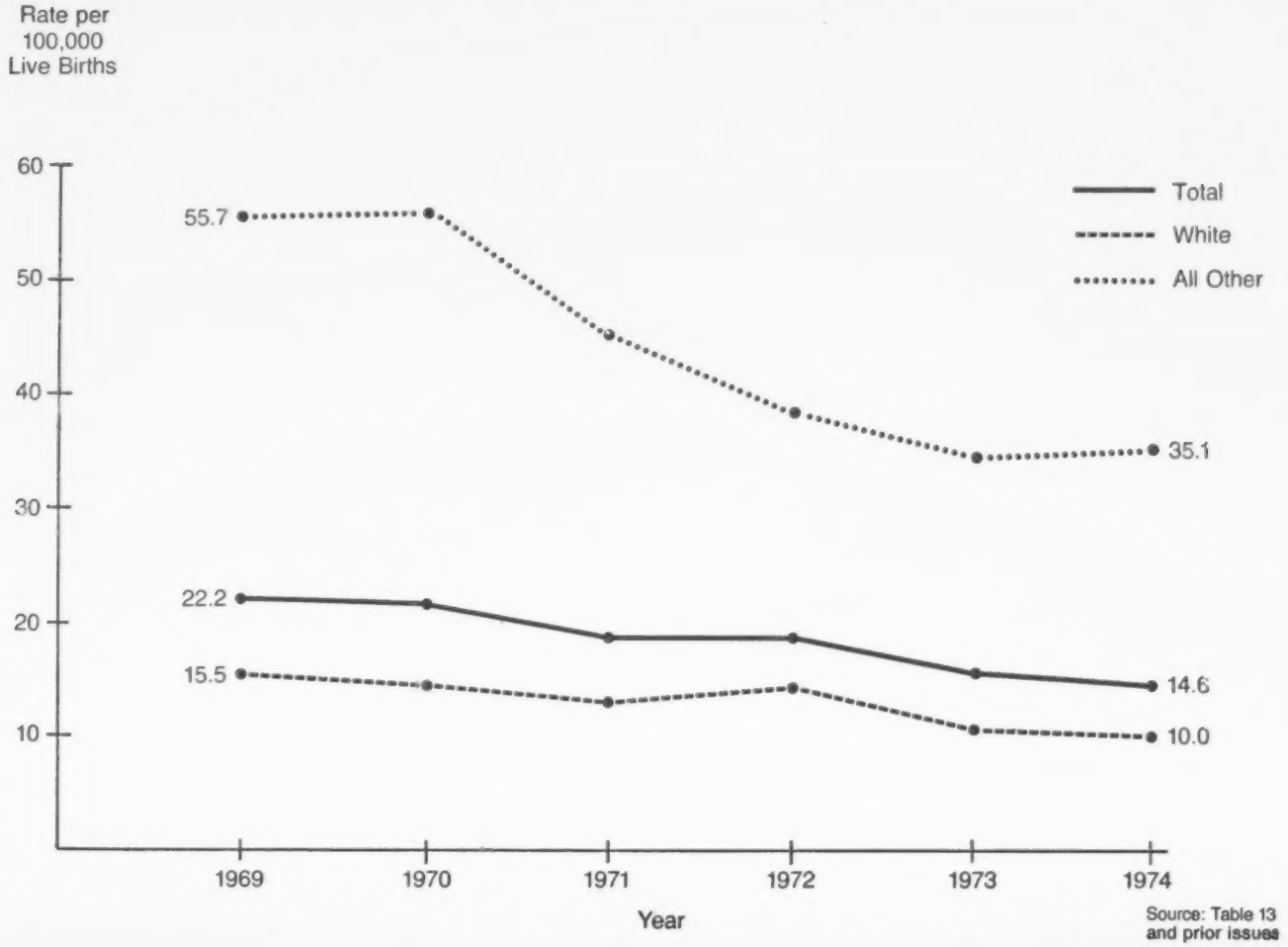
Note: Rates per 100,000 live births in specified group.

[a]Complications of pregnancy, childbirth and puerperium.

[b]Rates computed by relating deaths of women 45 years and over to live births to women 45-49 years.

Sources: National Center for Health Statistics: Vital Statistics of the United States, 1969 Vol. II, Part A, Sect. 1:50; 1973 Vol. II, Part A, Sect. 1:72; 1974 Vol. II, Part A, Sect. 1:73; Government Printing Office 1974, 1977, 1978.

Figure 8—Maternal Mortality Rates by Race, 1969-1974



Source: Table 13
and prior issues

Characteristics of the Health Services Delivery System

The supply of health services--both personnel and facilities--must be considered in any evaluation of health programs affecting the per capita demand for and utilization of health services.

As demand has grown, the health care industry has expanded. It has become the third largest employer in the U.S. economy. Despite such widespread expansion, however, few people would argue that the present distribution of health personnel approximates an ideal situation.

Adequate description of the health care delivery system requires development of a statistical profile of all providers of care and the patterns of utilization of their services. The following represents some of the highlights of the characteristics of the health services delivery system:

- As of December 31, 1977, there were 421,278 physicians in the U.S. and its possessions. Of these, 28,363 were inactive.
- 78.9 percent of all physicians were in patient-care activities, and of these, 69.8 percent were office based.
- In 1977, there were 19.3 physicians per 100,000 population compared to 142 in 1960.
- Data indicate that in 1974 there was an estimated 1,450,000 registered and practical nurses in the U.S.
- In 1976, the total number of active civilian dentists was 110,000. Active pharmacists in 1975 number 121,950.
- According to 1976 estimates, approximately 5,088,950 persons were employed in the health care field.
- A total of 7,099 hospitals with 1,407,000 beds were serving the U.S. population in 1977. Over one-half (59.6 percent) of these hospitals were short-term general community hospitals with fewer than 200 beds.
- Total outpatient visits increased 31.2 percent between 1970 and 1977, from over 181 million to almost 263 million.
- Adjusted expenses per inpatient day in community hospitals in 1976 was $173.25. This represents a 23.2 percent increase over 1975 and a 105.2 percent increase over 1970.
- The average number of physician visits per person per year was 4.8 in 1977 and 5.1 in 1975.
- The total number of nursing care and related homes in 1976 was 20,185. This represents 20.9 percent increase over the 1963 figure, but a 7.6 percent decrease from the 1973 figure.

Table 17—Federal and Non-Federal Physicians by Activity, 1977

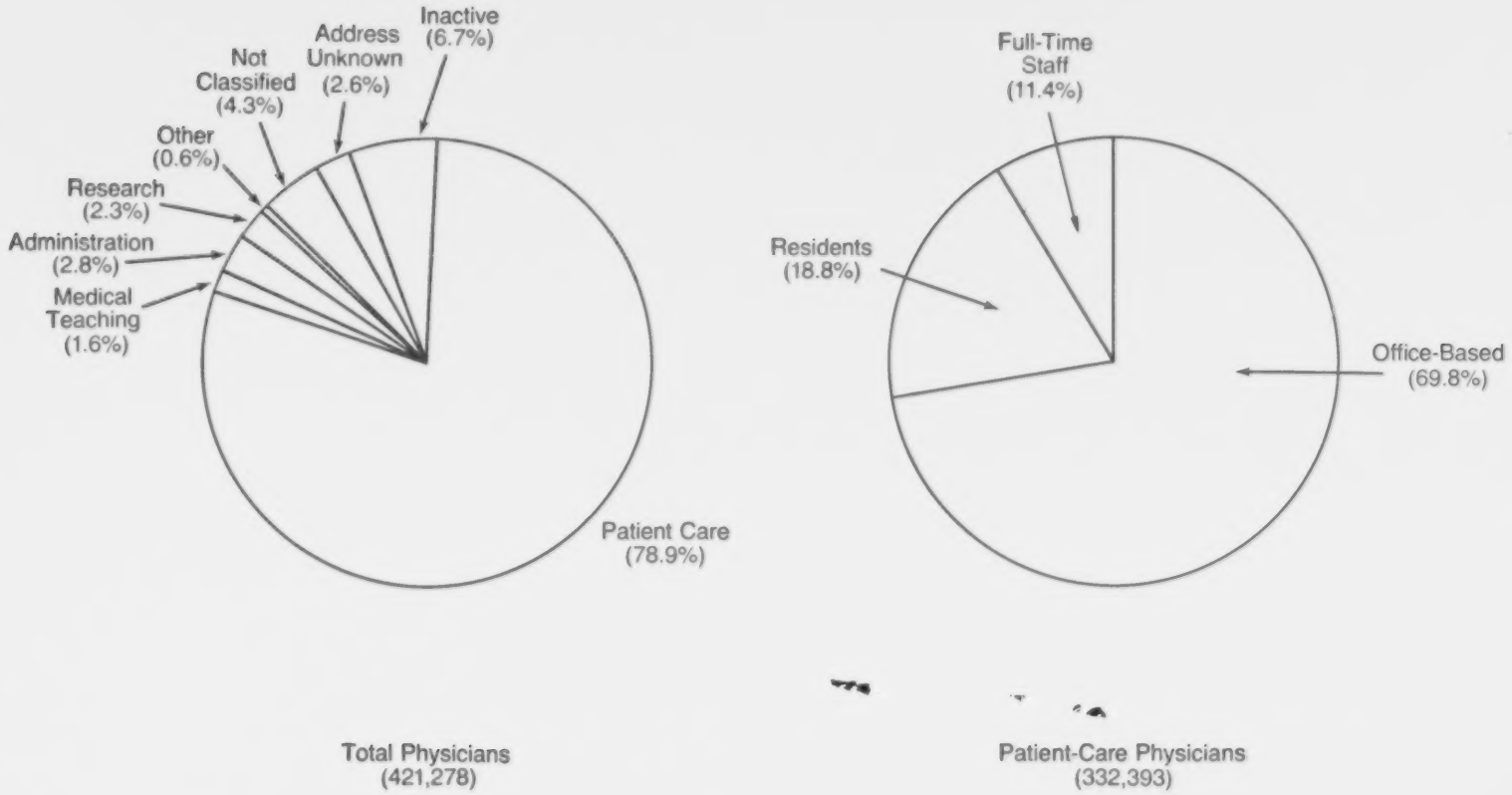
Activity	Total (100%)	Federal		Nonfederal	
		Number	Percent	Number	Percent
Total Physicians	421,278[a]	19,926	4.7[b]	390,406	92.7[b]
Patient Care	332,393	16,648	5.0	315,745	95.0
Office-Based	232,092	965	0.4	231,064	99.6
Hospital-Based	100,364	15,683	15.6	84,681	84.4
Residents--All Years	62,505	3,652	5.8	58,853	94.2
Full-Time Staff	37,859	12,031	31.8	25,828	68.2
Other Professional Activity	31,226	3,278	10.5	27,948	89.5
Medical Teaching	6,673	524	7.8	6,149	92.2
Administration	11,954	1,518	12.7	10,436	87.3
Research	9,786	1,020	10.4	8,766	89.6
Other	2,813	216	7.7	2,597	92.3
Not Classified	18,350	--	--	18,350	100.0
Inactive	28,363	--	--	28,363	100.0

[a]Includes 10,946 physicians with unknown addresses who are not distributed throughout table.

[b]2.6% for the unknown addresses should be added to the sum of 4.7% and 92.7% to get 100%.

Source: Physician Distribution and Medical Licensure in the U.S., 1977. Chicago: American Medical Association, 1979.

Figure 9—Percentage Distribution of Total Physicians and Physicians in Patient Care by Activity, 1977



Source: Table 17

Table 18—Physicians, Population and Physician/Population Ratios, Selected Years 1950-1977

Year	Total Physicians[a]	Total Population[b,c] (thousands)	Physicians Per 100,000 Population	Population Per One Physician	Nonfederal Physicians in Patient Care	Civilian Population[c] (thousands)	Nonfed. in Patient Care Per 100,000 Civ. Pop.[e]	Civ. Pop. Per One Nonfederal Physician in Pat. Care
1965	292,088	196,125	149	671	237,482	192,633	123	811
1970	334,028	206,539	162	618	255,027	203,109	126	796
1971	344,823	208,509	165	605	263,730	205,496	128	779
1972	356,534	210,137	170	589	269,095	207,306	130	770
1973	366,379	211,639	173	578	272,850	208,951	131	766
1974	379,748	213,187	178	561	278,517	210,555	132	756
1975	393,742	214,876	183	546	287,837	212,308	136	738
1976	409,446	216,437	189	529	294,730	213,889	138	726
1977	421,278	217,739	193.5	516.8	315,745	215,620	146	682

[a]Includes inactive, not classified and physicians whose address is unknown. As of December 31.

[b]Includes Armed Forces and their dependents in the U.S. and abroad. As of January 1 of year following data year.

[c]Excludes outlying U.S. outlying areas (Canal Zone, Pacific Islands, Puerto Rico and Virgin Islands).

[d]As of January 1 of the year following data year.

[e]As of December 31.

Sources: U.S. Dept. HEW: Health Manpower Source Book Section 20 PHS Pub. No. 263, Government Printing Office, 1969:34.

Physician Distribution and Medical Licensure in the U.S., 1977. Chicago: American Medical Association, 1979 (also earlier issues).

Table 19—Registered Nurses and Practical Nurses in Relation to Population, Selected Years 1960-1976

Year	Resident Population[a] (000s)	Registered Nurses		Practical Nurses	
		Number[b]	Per 100,000 Population	Number[b]	Per 100,000 Population
1960	178,729	504,000	282	206,000	115
1962	184,598	550,000	298	225,000	122
1964	190,169	582,000	306	250,000	131
1966	194,899	621,000	319	282,000	145
1968	199,017	667,000	335	320,000	161
1970	202,617	722,000	356	370,000	182
1971	205,056	750,000	366	400,000	195
1972	207,364	780,000	376	401,000	193
1973	209,118	815,000	390	423,000	202
1974	210,674	857,000	407	447,000	212
1975	212,318	906,000	427	468,000	220
1976	214,047	961,000	449	489,000	228

[a]For 1975-1976, preliminary estimates.

[b]Estimates.

Source: U.S. Dept. HEW: Health Resources Statistics, 1975. Government Printing Office, 1976:195-196; U. S. Dept. HEW: Health Resources Statistics, 1976-77 Government Printing Office, 1978

Table 20—Dentists in Relation to Population, Selected Years 1950-1976

Dentists and Population	1950	1960	1970	1973	1976
Total Dentists	89,440	102,940	116,280	121,800	130,000
Total Population (000s)[a]	153,620	182,290	206,070	211,220	215,869
Dentists Per 100,000 Population	58.2	56.5	56.4	57.6	60.2
Active Dentists	76,940	90,040	102,220	107,320	115,000
Active Civilian Dentists	75,310	84,500	95,680	100,780	110,000
Resident Civilian Population (000s)[b]	151,240	179,740	203,110	208,960	213,860
Active Civilian Dentists Per 100,000 Civilians	49.8	47.0	47.1	48.2	51.4

Note: All data as of December 31.

[a]Includes all persons in the United States and in the armed forces abroad.

[b]Excludes armed forces in the United States and abroad.

Source: U.S. Dept. HEW: Health Resources Statistics, 1975. Government Printing Office, 1976:80; U. S. Dept. HEW: Health Resources Statistics, 1976-77 Government Printing Office, 1978.

Table 21—Pharmacists in Relation to Population, Selected Years 1950-1975

Year	Civilian Population (thousands)	Active Pharmacists	Active Pharmacists Per 100,000 Population
1950[a]	150,697	89,200	59.2
1960	179,323	96,200	53.6
1970	203,212	110,400	54.3
1974[b]	210,692	115,600	54.9
1975[c]	213,953	121,500	56.9

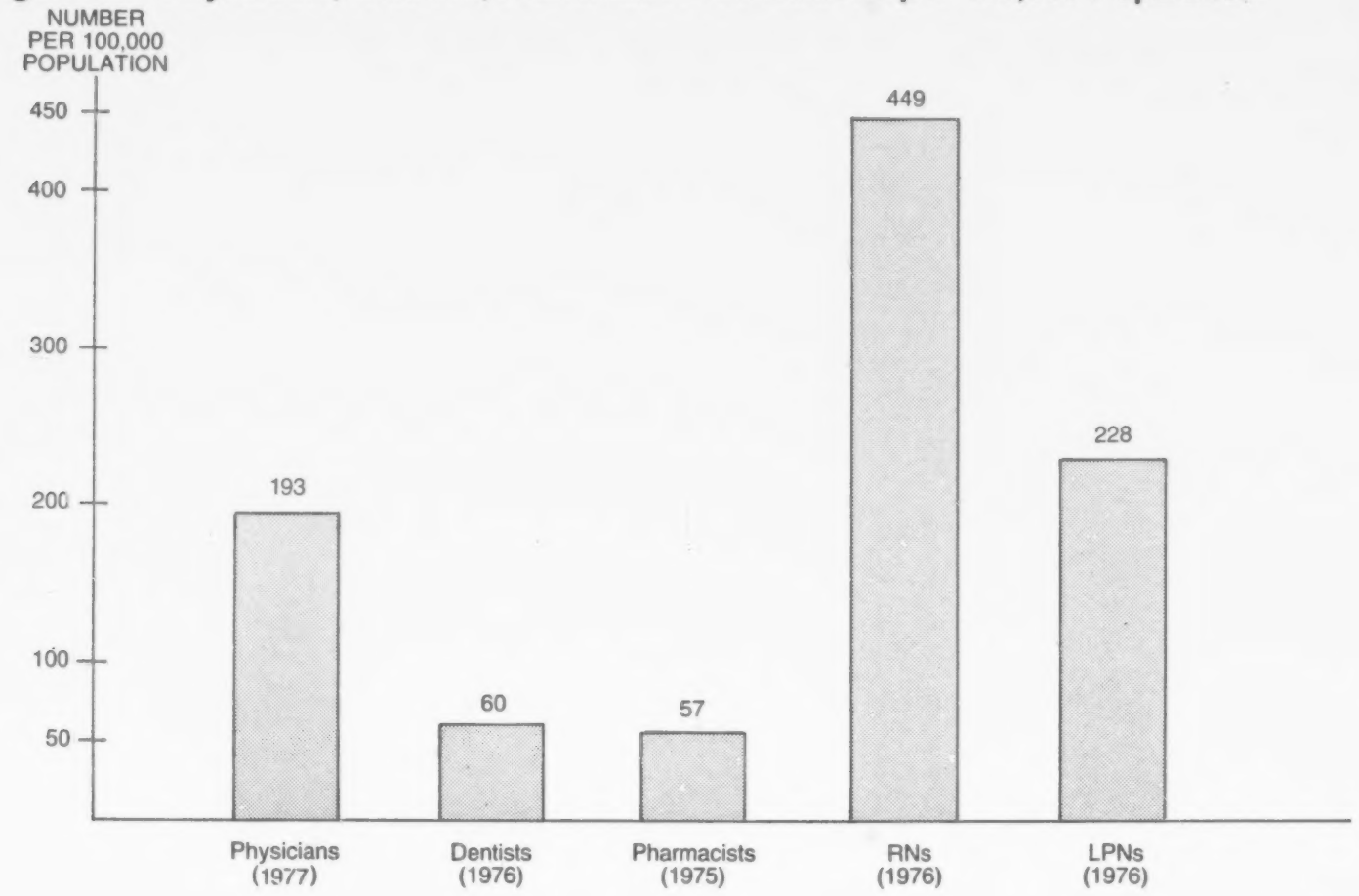
[a]Excludes data for Alaska and Hawaii.

[b]Excludes Puerto Rico and United States possessions. January 1 estimate.

[c]Excludes Puerto Rico and United States possessions. December 31 estimate.

Source: U.S. Dept. HEW: Health Resources Statistics, 1976-1977. Government Printing Office, 1978.

Figure 10—Physicians, Dentists, Pharmacists and Nurses per 100,000 Population



Source: Tables 18, 19, 20 and 21

Table 22—Estimated Number of Persons Employed in Selected Occupations Within the Health Care Field, 1976

Health Field	Number	Health Field	Number
Total[a]	5,051,050 to 5,088,950		
Administration of health	48,200	Nursing & related services	2,484,000
Anthropology & sociology	48,200	Occupational therapy	17,000 to 18,000
Automatic data processing	4,300	Opticianry	12,000
Basic sciences[b]	65,000	Optometry	25,100 to 25,300
Biomedical engineering	13,000	Orthotic/prosthetic techn.	2,800 to 3,800
Chiropractic	18,200	Pharmacy	121,500
Clinical Laboratory Serv.	193,400	Physician extender services	5,000
Dentistry & allied serv.	321,300	Physicial therapy	32,100
Dietetic & nutritional serv.	77,000	Podiatric medicine	7,100
Economic research	500	Psychology	71,000
Environmental sanitation	23,000 to 25,000	Radiologic technology	100,000
Food & drug services	51,100	Respiratory therapy	25,000
Funeral directors & embalmers	50,000	Secretarial/office services	275,000 to 300,000
Health & vital statistics	1,350	Social work	47,300
Health education	23,000	Special rehab. services	13,700
Health info. & commun.	8,400 to 10,500	Speech pathology/audiology	30,800
Library services	10,300	Veterinary medicine	36,000
Medical records	65,000	Vocational rehabilitation	18,000
Medicine & osteopathy	393,700	Miscellaneous health services	355,450 to 360,950

[a]Each occupation is counted only once. For example, all physicians are in medicine and osteopathy.

[b]Statistics are not available on what percentage of the estimated 215,000 physician scientists are employed in the health field.

Source: U.S. Dept. HEW: Health Resources Statistics, 1976-77. Government Printing Office 1978.

Table 23—Number of Hospitals, Hospital Beds, and Selected Data by Type of Hospital, 1970 and 1977

Type of Hospital	Hospitals		Beds (thousands)		Hospital Admissions (thousands)		Average Daily Census (thousands)		Occupancy (Percent)	
	1970	1977	1970	1977	1970	1977	1970	1977	1970	1977
Total U.S.	7,123	7,099	1,616	1,407	31,759	37,059	1,298	1,065	80.3	75.8
Federal	408	377	161	123	1,741	2,017	128	98	79.6	79.6
Nonfederal	6,715	6,722	1,455	1,283	30,018	35,042	1,170	967	80.4	75.4
Psychiatric	519	541	527	261	598	87	598	210	84.8	80.7
Tuberculosis	101	19	20	3	36	12	12	2	61.8	60.4
Long-Term General	236	189	60	45	132	89	49	58	82.0	84.3
Short-Term General[a]	5,859	5,973	848	973	29,252	34,353	662	716	78.0	73.6
Community Hospitals	NA	5,881	NA	969	NA	34,273	NA	714	NA	73.8
6-24 beds	397	283	7		241	167	4	2	55.7	46.9
25-49	1,327	1,108	48	40	1,655	1,340	30	22	63.6	54.4
50-99	1,490	1,442	105	103	3,669	3,550	74	65	70.7	62.9
100-199	1,275	1,401	177	196	6,414	7,063	134	136	75.8	69.4
200-299	592	713	141	173	5,148	6,458	114	131	80.3	76.0
300-399	356	380	121	129	4,348	4,729	99	100	82.3	77.8
400-499	190	243	83	108	2,915	3,964	70	86	84.3	79.7
500 or more	232	311	166	214	4,862	6,999	136	171	81.8	80.1

Note: Figures may not add due to rounding.

[a]For 1976, includes data for hospital units of institutions other than community hospitals which are not classified by number of beds.

Sources: Hospitals Guide Issue 45:485, August 1 (pt. 2), 1971.

Hospital Statistics. Chicago: American Hospital Association, 1978:20.

Table 24—Total Outpatient Visits in 1970 and 1977 and Type of Outpatient Visits in 1977

Type of Hospital	Total Outpatient Visits		Percent Change 1970-1977	1977 Outpatient Visits by Type of Visits	
	1970	1977		Emergency	Clinic
Total U.S.	181,370,461	263,775,060	+ 49.3	77,633,640	107,006,411
Federal	42,912,742	53,142,462	+ 30.8	4,522,665	46,944,316
Nonfederal	138,457,719	210,632,598	+ 55.1	73,110,975	60,062,095
Psychiatric	2,739,743	5,018,148	+100.6	138,062	3,921,713
Tuberculosis	784,166	34,925	- 90.5	0	32,853
Long-term general	1,389,138	1,341,707	+ 7.1	17,094	880,326
Short-term general[a]	133,544,672	204,237,818	+ 55.5	72,955,819	55,227,203
Community	NA	198,707,523	NA	72,607,460	72,350,976
6-24 beds	988,677	984,465	- 7.0	293,157	273,098
25-49	6,328,810	6,226,239	- 3.3	2,389,664	1,287,871
50-99	10,756,382	16,510,654	+ 51.5	7,251,770	2,057,347
100-199	23,489,914	37,111,161	+ 53.4	15,086,577	6,488,446
200-299	23,901,985	34,268,202	+ 47.8	14,525,876	6,225,754
300-399	20,392,848	27,913,077	+ 48.6	10,477,254	5,519,995
400-499	14,600,633	24,006,467	+ 57.7	8,244,514	6,845,574
500 and over	33,085,423	51,687,258	+ 60.8	14,338,648	22,651,891

[a]For 1976, includes data for hospital units of institutions not classified by number of beds.

SOURCES: Hospitals Guide Issue 45:485, August 1 (pt. 2), 1971.

Hospital Statistics, Chicago: American Hospital Association, 1978:20.

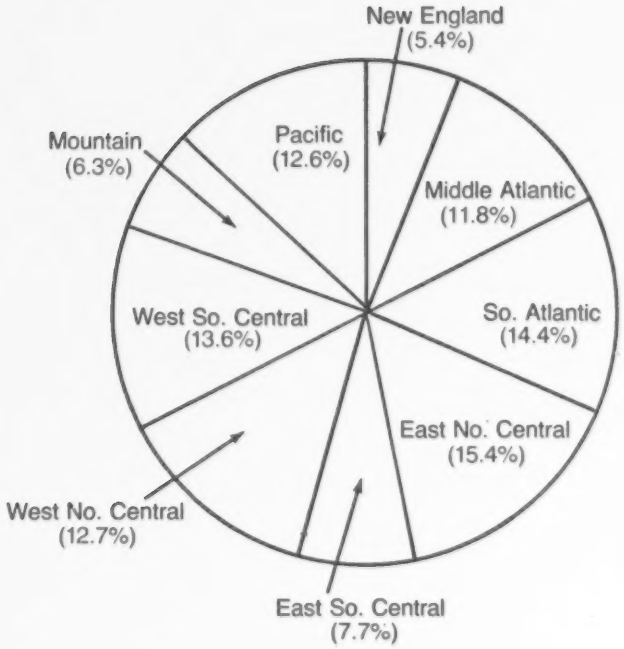
Table 25—Hospitals, Admissions, Average Daily Census, Beds, and Occupancy Rate by Census Division, 1977

Census Divisions	Hospitals	Hospital Beds	Admissions (thousands)	Average Daily Census (thousands)	Occupancy Rate
United States -- Total	7,099	1,407,095	37,059	1,065	75.8
New England	384	88,953	1,947	70	79.1
Middle Atlantic	841	275,346	5,840	225	81.7
South Atlantic	1,021	224,709	5,921	171	76.2
East North Central	1,094	260,542	7,036	201	77.4
East South Central	549	92,112	2,752	70	76.4
West North Central	900	129,923	3,318	93	71.4
West South Central	967	133,842	4,076	94	70.3
Mountain	448	52,446	1,681	36	69.3
Pacific	895	149,224	4,484	104	69.8

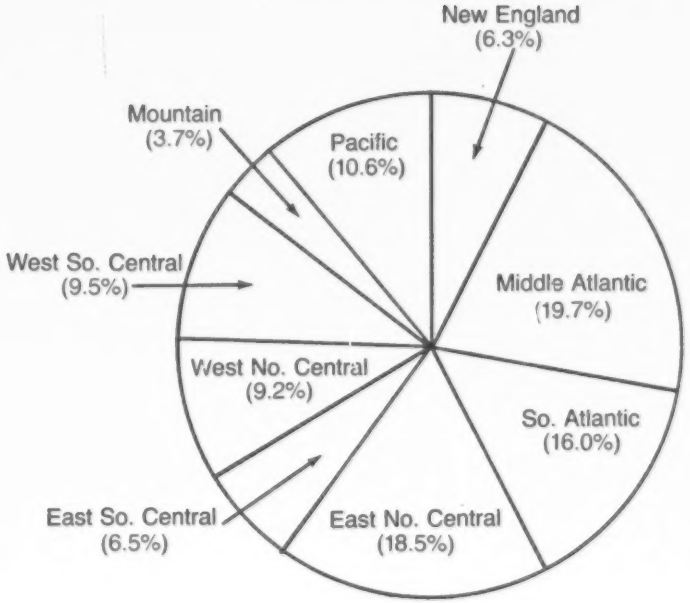
Note: Components may not add to totals because of rounding.

Source: Hospital Statistics, Chicago: American Hospital Association, 1978:21-34.

Figure 11—Percentage Distribution of Hospitals and Hospital Beds by Census Division, 1977



HOSPITALS



HOSPITAL BEDS

Source: Table 25

Table 26—Selected Utilization Measures in all U.S. Hospitals and in Community Hospitals, 1967, 1976 and 1977

Measure	All U.S. Hospitals			Percent Change		Community Hospitals			Percent Change	
	1967	1976	1977	1967-77	1976-77	1967	1976	1977	1967-77	1976-77
Hospitals	7,172	7,082	7,099	-1.0	.02	5,850	5,857	5,881	0.5	0.4
Beds (000s)	1,671	1,434	1,407	-15.8	-1.9	788	956	969	23.0	1.4
Average number of beds per hospital	233	202	198	-15.0	-2.0	135	163	165	22.2	1.2
Admissions (000s)	29,361	36,776	37,060	26.2	-0.8	26,988	33,979	34,273	27.0	0.9
Average daily census (000s)	1,380	1,090	1,066	-22.8	-2.2	612	713	715	16.8	0.3
Average length of stay, days	NA	NA	NA	--	--	8.3	7.7	7.6	-8.4	-1.3
Occupancy percent	82.6	76.0	75.8	-8.2	-0.3	77.6	74.6	73.8	-4.9	-1.1
Outpatient visits	148,229[a]	270,951	263,775	78.0	-2.6	a	201,247	198,708	--	-1.3

NA - Comparable data not available.

[a]Based only on hospitals reporting outpatient visits.

Source: Hospital Statistics. Chicago: American Hospital Association, 1978:v.

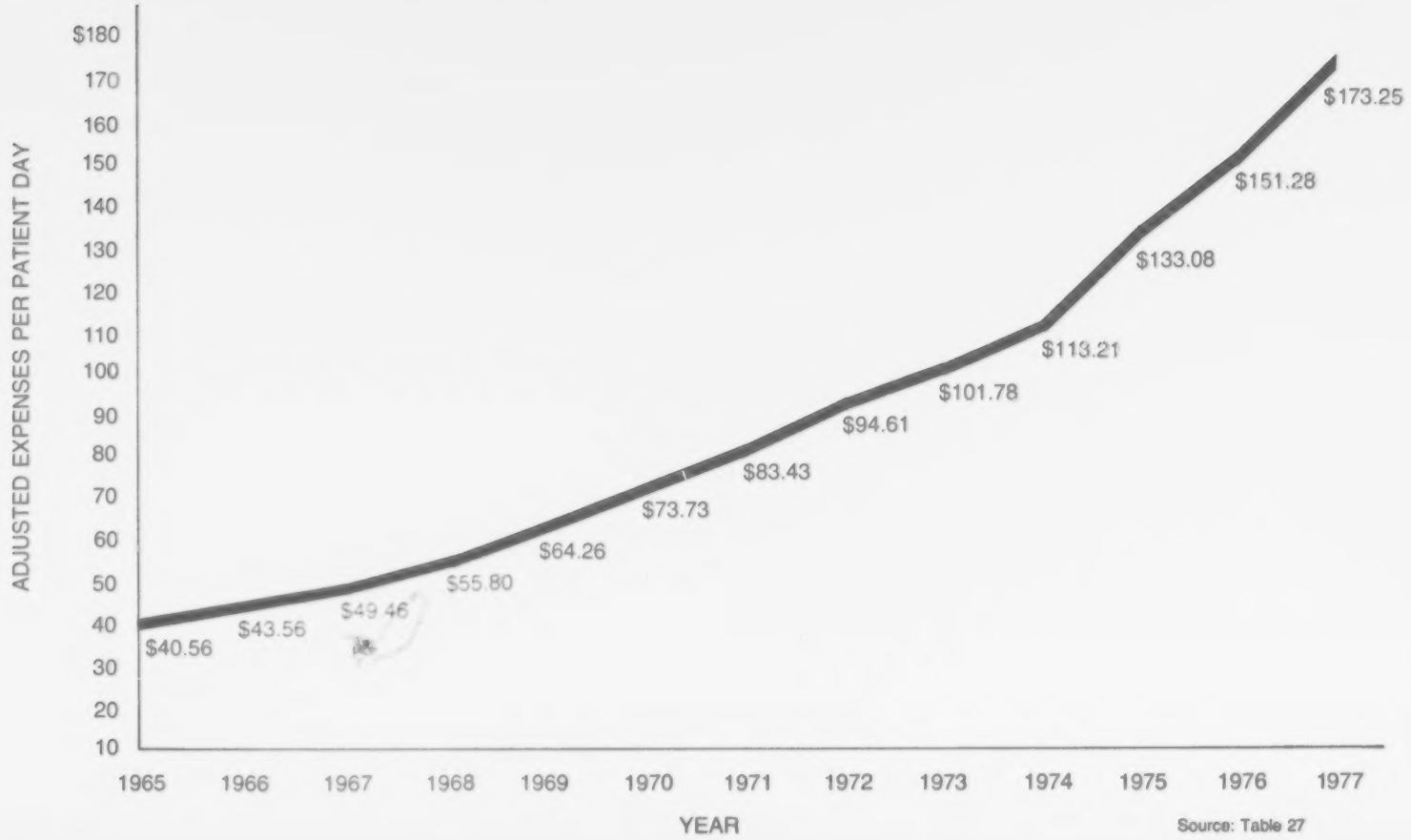
Table 27—Total Expenses and Expenses per Patient Day for Non-Federal Short-Term General Hospitals, Selected Years 1950-1977

Year	Total Expenses (in millions)	Percentage Increase	Expenses Per Inpatient Day	Percentage Increase	Adjusted Expenses Per Inpatient Day[a]	Percentage Increase
1950	$ 2,120	--	$ 15.62	--	NA	
1955	3,434	10.0%	23.12	6.3%	--	
1960	5,617	10.3	32.23	6.8		
1965	9,147	9.6	44.48	7.0	$ 40.56	--
1967	12,081	17.6	54.08	12.3	49.46	13.2
1968	14,162	17.2	61.38	13.5	55.80	12.8
1969	16,613	17.3	70.03	14.1	64.26	15.1
1970	19,560	17.7	81.01	15.7	73.73	14.7
1971	22,400	14.5	92.31	13.9	83.43	13.1
1972	25,549	14.1	105.21	14.0	94.61	13.4
1973	28,496	11.5	114.69	9.0	101.78	7.5
1974	32,751	14.9	128.05	10.4	113.21	11.2
1975	39,110	19.4	151.42	18.3	133.08	17.5
1976	45,116	15.4	NA	NA	152.24	13.6
1977	51,832	12.9	NA	NA	173.25	12.1

[a]Costs incurred are adjusted to eliminate that portion expended for outpatient care. The 1976 and 1977 data includes adjusted expenses only.

Source: Hospital Statistics, Chicago: American Hospital Association, 1978:5.

Figure 12—Adjusted Expenses per Patient Day for Non-Federal Short-Term General Hospitals, 1965-1977



Source: Table 27

Table 28—Average Unit Charge for Selected Ancillary Services in Community Hospitals, 1971-1974

Ancillary Service and Type of Hospital Control	Average Unit Charge				Percentage Increase			
	1971	1972	1973	1974	1971-72	1972-73	1973-74	1971-74
X-Ray Procedure								
All Hospitals	$18.51	$ 19.01	$ 19.72	$ 20.89	2.7%	3.7%	5.9%	12.9%
Nongovernment	19.15	19.72	20.54	21.74	3.0	4.2	5.8	13.5
State & Local Government	15.77	16.08	16.43	17.36	2.0	2.2	5.7	10.1
Operating Room Visit								
All Hospitals	98.17	108.33	117.08	131.87	10.3	8.1	12.6	34.3
Nongovernment	99.82	110.51	119.75	135.54	10.7	8.4	13.2	35.8
State & Local Government	89.22	97.25	103.40	113.21	9.0	6.3	9.5	26.9
Pharmacy Items								
All Hospitals	6.36	7.24	7.83	8.75	13.8	8.1	11.7	37.6
Nongovernment	6.32	7.20	7.76	8.66	13.9	7.8	11.6	37.0
State & Local Government	6.52	7.40	8.16	9.17	12.5	10.3	12.4	40.6
Clinical Laboratory Procedure								
All Hospitals	3.52	3.64	3.70	3.92	3.4	1.6	5.9	11.4
Nongovernment	3.58	3.72	3.80	4.01	3.9	2.2	5.5	12.0
State & Local Government	3.25	3.27	3.28	3.54	0.6	0.3	7.9	8.9

Note: This survey has been discontinued. No new data is available.

Source: Survey of Charges in Community Hospitals as of January 1, 1975. Chicago: American Hospital Association, 1975:xxii.

Table 29—Average Charge for Selected Ancillary Services in Community Hospitals by Hospital Size, 1974

Hospital Size	Ancillary Service							
	X-Ray Procedure		Operating Room Visit		Pharmacy Items		Clinical Lab Procedure	
	Number of Hospitals	Average Charge	Number of Hospitals	Average Charge	Number of Hospitals	Average Charge	Number of Hospitals	Average Charge
U.S. Total	4,217	$20.89	4,399	$131.87	4,440	$8.75	4,149	$ 3.92
6-24 Beds	184	15.45	174	87.15	185	7.40	184	5.19
25-29	825	16.45	871	81.34	883	7.76	818	4.60
50-99	1,060	18.15	1,103	97.74	1,130	8.42	1,045	4.32
100-199	935	19.92	973	109.03	979	8.65	922	4.03
200-299	514	20.94	545	125.03	540	8.69	499	3.86
300-399	310	21.79	322	134.41	320	8.44	303	3.67
400-499	191	20.19	199	146.49	195	9.06	186	3.76
500 or more	198	23.53	212	167.98	208	9.33	192	3.99
Metropolitan	2,038	21.98	2,149	141.28	2,148	9.15	2,009	4.04
Nonmetropolitan	2,179	17.24	2,257	96.42	2,292	7.53	2,140	3.47

Note: This survey has been discontinued. No new data is available.

Source: Survey of Charges in Community Hospitals as of January 1, 1975, Chicago: American Hospital Association, 1975:xxiii.

Table 30—Utilization Trends in Community Hospitals, Selected Years 1950-1977

	Hospital Beds		Average Daily Census		Admissions During Year	
	Number (000)	Per 1,000 Population	Number (000)	Per 1,000 Population	Number (000)	Per 1,000 Population
1950	505	3.4	372	2.5	16,663	110.9
1955	568	3.5	407	2.5	19,100	117.7
1960	639	3.6	477	2.7	22,970	128.9
1962	677	3.7	509	2.8	24,307	132.3
1963	698	3.7	530	2.8	25,267	135.4
1964	721	3.8	550	2.9	25,987	137.2
1965	741	3.8	563	2.9	26,463	137.9
1966	768	4.0	588	3.0	26,897	138.8
1967	788	4.0	612	3.1	26,988	137.9
1968	806	4.1	630	3.2	27,276	138.1
1969	826	4.1	651	3.3	28,254	141.5
1970	848	4.2	662	3.3	29,252	145.1
1971	867	4.2	665	3.3	30,142	147.6
1972	884	4.3	664	3.2	30,777	149.1
1973	903	4.3	681	3.3	31,761	152.6
1974	931	4.4	670	3.3	32,866	156.7
1975	NA	4.5	706	3.3	33,435	158.2
1977[a]	969	4.6	715	3.4	34,273	161.4

Note: The hospital data exclude newborn infants, nursery accommodations, psychiatric and tuberculosis hospitals. The population data refer to the civilian resident population.

[a]Preliminary estimates.

Source: Source Book of Health Insurance Data, 1976-1977. New York: Health Insurance Institute, 1977:65.

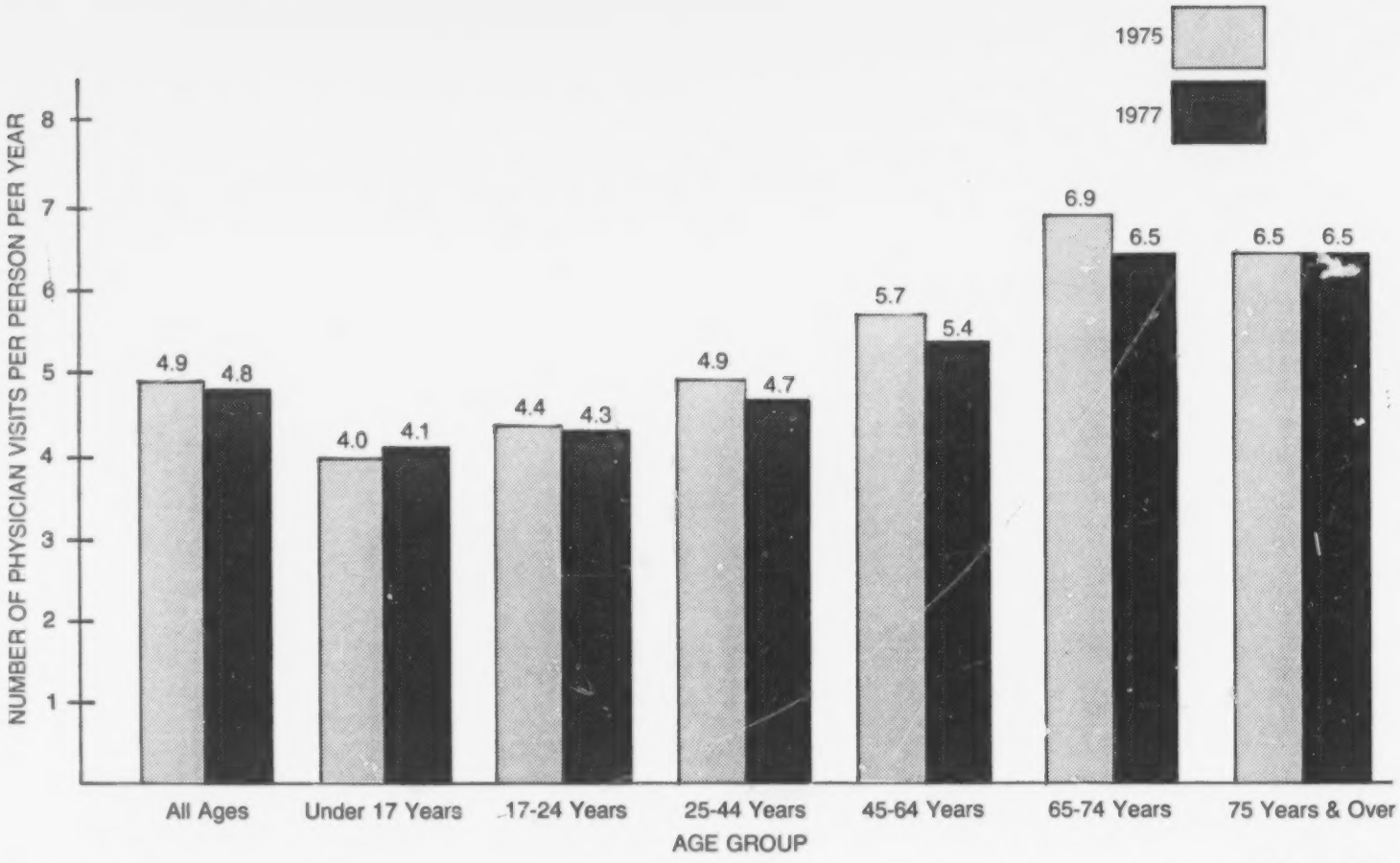
Table 31—Number of Physician Visits and Physician Visits per Person per Year, by Age and Sex, 1975 and 1977

Age (years)	Physician Visits (thousands)						Visits Per Person Per Year					
	Both Sexes		Male		Female		Both Sexes		Male		Female	
	1975	1977	1975	1977	1975	1977	1975	1977	1975	1977	1975	1977
All Ages	1,056,094	1,020,397	435,256	425,932	620,838	594,465	5.1	4.8	4.3	4.2	5.7	5.4
Under 17	263,196	245,108	141,261	127,750	121,935	117,358	4.2	4.1	4.5	4.2	4.0	4.0
17-24	144,583	135,663	50,350	45,814	94,233	89,849	4.8	4.3	3.4	3.0	6.0	5.6
25-44	265,038	260,850	90,630	94,391	174,408	166,459	5.1	4.7	3.6	3.5	6.4	5.8
45-64	242,618	233,509	97,096	99,055	145,521	134,473	5.6	5.4	4.7	4.8	6.5	5.9
65-74	89,171	93,194	37,038	39,831	52,133	53,364	6.6	6.5	6.3	6.4	6.8	6.6
75 and over	51,487	52,073	18,880	19,091	32,607	32,982	6.6	6.5	6.5	6.4	6.7	6.6

Note: Data are based on household interviews of the civilian noninstitutionalized population.

SOURCE: Current Estimates from the Health Interview Survey - United States (1976, 1977). Vital and Health Statistics Series 10, No. 119 and 126, November 1977:30; September 1978:30.

Figure 13—Number of Physician Visits per Person per Year by Age, 1975 and 1977



Source: Table 31

National Health Care Expenditures

In the recent past increased demand for health services has been visible in the rising prices and increased consumer expenditures for health. A summary of the trend over the past several years in expenditures for items or units of service follows:

- Health care expenditures in the U.S. reached an estimated $163.0 billion or $737 per capita, in fiscal year 1977. This amount represented 8.7 percent of the Gross National Product, compared to 5.8 percent eleven years earlier.
- In 1977, hospital care expenditures of $65.6 billion or $297 per capita accounted for the largest component of total health care outlays (40.4 percent).
- Expenditures for physicians' services amounted to $32.2 billion or $146 per capita in fiscal 1977. This amount represented the second largest component of total expenditure (19.8 percent).
- In the seven year period 1970-1976, per capita personal health care expenditures increased 150 percent, from $290 to $737.
- Per capita personal health expenditures for persons 65 years of age and older was $1,745 in fiscal 1977. This is almost three times greater than the per capita expenditures for all age groups ($696).
- The "all items" component of the CPI increased 6.5 percent between 1976 and 1977 compared to 5.7 percent the previous year and the medical care component increased 9.9 percent compared to 10.0 the previous year. Hospital service charge for a semi-private room increased 13.8 percent between 1976 and 1977 compared to 13.2 the previous year.

Table 32—Number of Nursing Homes and Nursing Home Beds 1963, 1973 and 1976

Type of Nursing Care and Related Homes	Nursing Homes			Nursing Home Beds		
	1963	1973	1976	1963	1973	1976
Total Homes	16,701	21,834	20,185	568,560	1,327,704	1,406,778
Nursing Care	8,128	14,873	13,312	319,224	1,107,358	1,173,519
Personal Care Homes with Nursing	4,958			188,306		
Personal Care Homes without Nursing	2,927	6,961[a]	6,873[a]	48,962	220,346[a]	233,359[a]
Domiciliary Care	688			12,068		

[a]Includes personal care homes with nursing, personal care homes without nursing and domicilary care homes.

Source: U.S. Dept. HEW: Health Resources Statistics, 1975. Government Printing Office, 1976:365; U. S. Dept. HEW: Health Resources Statistics, 1976-77. Government Printing Office, 1978.

Table 33—Aggregate and Per Capita National Health Expenditures by Percent of Gross National Product, Selected Fiscal Years 1929-1977

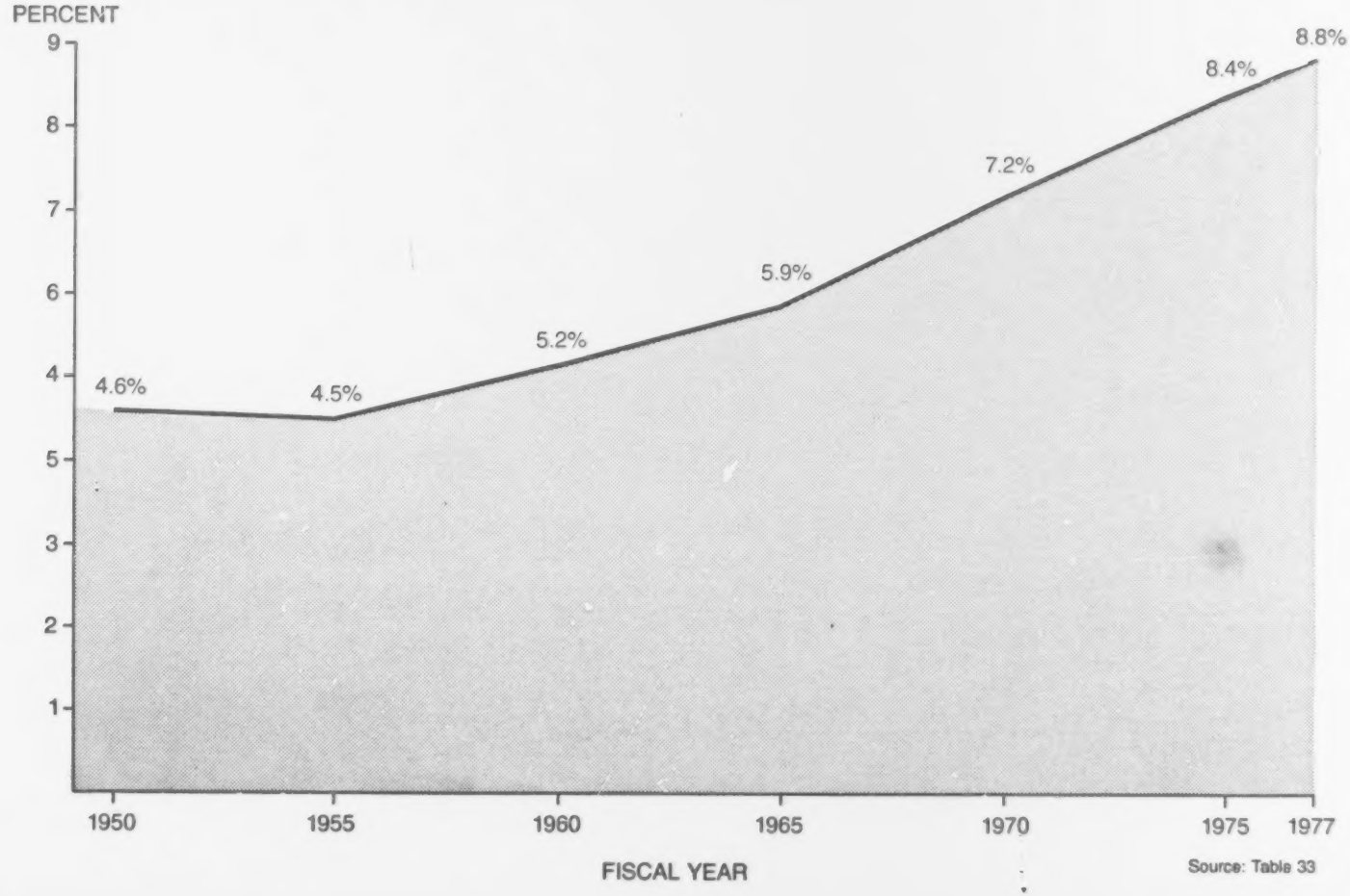
Fiscal Year	Gross National Product (billions)	Health Expenditure (millions)	Percent of GNP	Per Capita
1929	$ 101.3	$ 3,589	3.5	$ 29.16
1935	68.3	2,846	4.1	22.04
1940	95.4	3,883	4.1	28.98
1950	264.8	12,027	4.5	78.35
1955	381.0	17,330	4.5	103.76
1960	498.3	25,856	5.2	141.63
1965	658.0	38,892	5.9	197.75
1967	773.5	45,879	6.2	237.93
1968	830.2	53,765	6.5	264.37
1969	904.2	60,617	6.7	295.20
1970	960.2	69,201	7.2	333.57
1971	1,019.8	77,162	7.6	368.25
1972	1,111.8	86,687	7.8	409.71
1973	1,238.6	95,383	7.7	447.31
1974	1,361.2	106,321	7.8	495.01
1975	1,454.5	123,716	8.5	571.21
1976[a]	1,625.4	141,013	8.7	645.76
1977[b]	1,838.0	162,627	8.8	736.92

[a]Revised estimates.

[b]Preliminary estimates.

Source: Gibson, R.M., Fisher, C.R.: National Health Expenditures, Fiscal Year 1977. Social Security Bulletin 41:3-20 & July 1978.

Figure 14—National Health Expenditures as a Percentage of Gross National Product, Fiscal Years 1950-1977



Source: Table 33

Table 34—National Health Expenditures by Type of Expenditure, Fiscal Years 1966 and 1977

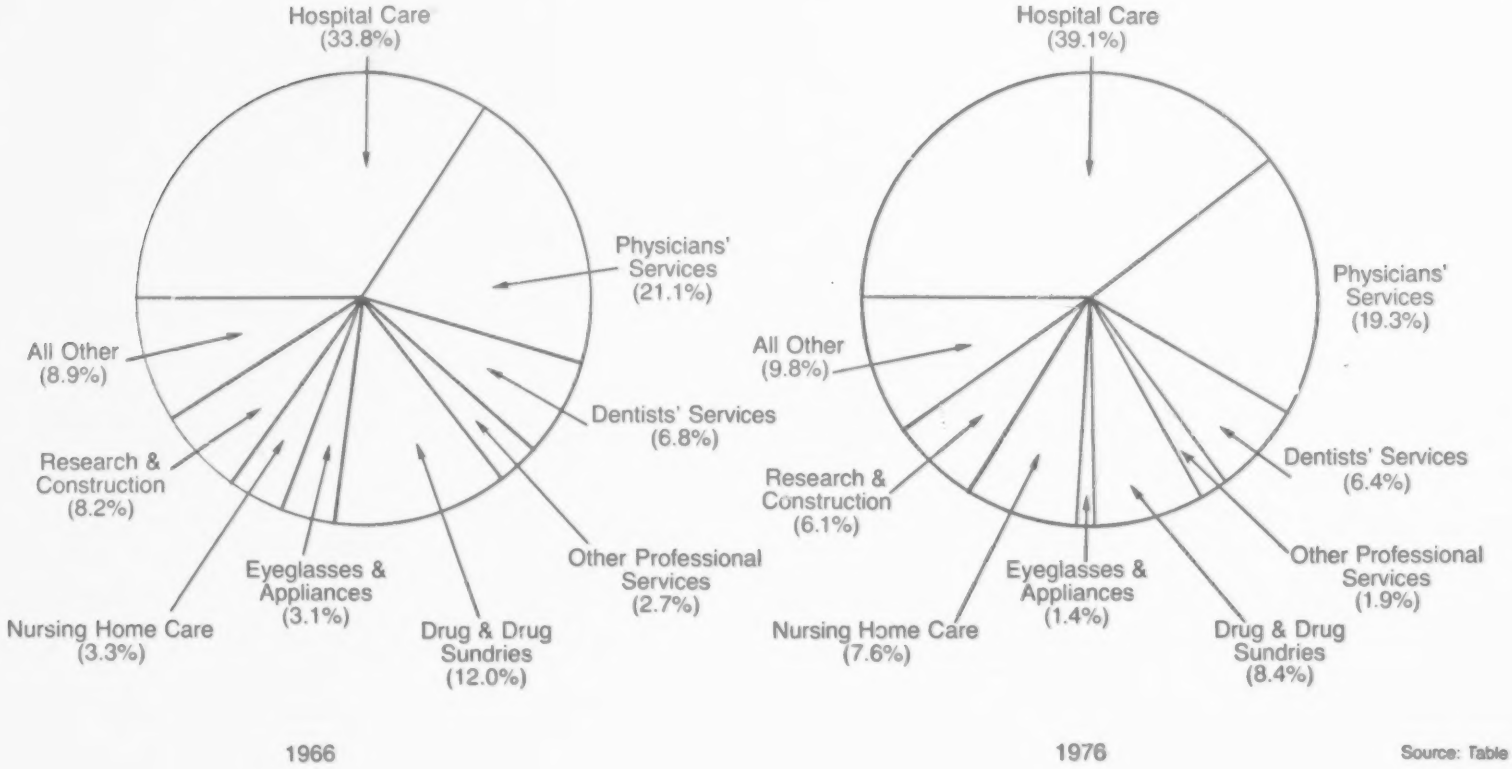
Type of Expenditure	FY1966 Amount	FY1966 Percent	FY1966 Per Capita	FY1977[a] Amount	FY1977[a] Percent	FY1977[a] Per Capita
Total Expenditures	$42,109	100.0%	$211.56	$162,627	100.0%	$736.92
Health Services and Supplies	38,661	91.8	194.24	153,887	94.6	697.32
Personal Health Care Expense	36,484	86.6	NA	142,586	87.4	646.11
Hospital Care	14,245	33.8	71.57	65,627	40.4	297.38
Physicians' Services	8,865	21.1	44.54	32,184	19.8	145.84
Dentists' Services	2,866	6.8	14.40	10,020	6.2	45.11
Other Professional Services	1,140	2.7	5.73	3,212	2.0	14.56
Drugs and Drug Sundries	5,032	12.0	25.28	12,516	7.7	56.72
Eyeglasses and Appliances	1,309	3.1	6.58	2,086	1.3	9.45
Nursing-Home Care	1,407	3.3	7.07	12,618	7.8	57.18
Other Health Services	1,620	3.8	8.14	4,322	2.7	19.59
Expenses for Prepayment and Administration	1,446	3.4	7.26	7,572	4.7	34.31
Government Public Health Activities	731	1.7	3.67	3,729	2.3	16.90
Research & Medical Facilities Construction	3,448	8.2	17.32	8,739	5.4	39.60
Research	1,545	3.7	7.76	3,684	2.3	16.70
Construction	1,903	4.5	9.56	5,055	3.1	22.91

Note: Percentages may not add to totals due to rounding.

[a]Preliminary estimates.

Source: Gibson, R.M., Fisher, C.R.: National Health Expenditures, Fiscal Year 1977, Social Security Bulletin 41:3-20, & July 1978.

Figure 15—Percentage Distribution of Total National Health Expenditures by Type of Expenditure, Fiscal Years 1966 and 1977



Source: Table 34

Table 35—Aggregate, Per Capita and Percentage Distribution of Personal Health Care Expenditures by Type of Expenditure, Selected Fiscal Years 1950-1977

Fiscal Year	Total--All Personal Health Care Services			Hospital Care			Physicians' Services			All Other Personal Health Care Services[a]		
	Total[b]	Per Capita	Percent	Total[b]	Per Capita	Percent	Total[b]	Capita	Percent	Total[b]	Per Capita	Percent
1950	$ 10,400	$ 67.75	100.0	$ 3,698	$ 24.09	35.5	$ 2,689	$ 17.52	25.9	$ 4,013	$ 26.14	38.6
1955	15,231	91.19	100.0	5,689	34.06	37.4	3,632	21.75	23.8	5,910	35.38	38.8
1960	22,729	124.50	100.0	8,499	46.56	37.4	5,580	30.57	24.5	8,650	47.38	38.1
1965	33,498	170.32	100.0	13,152	66.89	39.3	8,405	42.75	25.1	11,941	60.72	35.6
1970	60,113	289.76	100.0	25,879	124.74	43.0	13,443	64.80	22.4	20,791	100.22	34.6
1972	74,828	353.66	100.0	32,720	154.64	43.7	16,527	78.11	22.1	25,581	120.90	34.2
1973	82,490	386.84	100.0	36,155	169.55	43.8	17,995	84.39	21.8	28,340	132.90	34.4
1974[c]	91,315	425.15	100.0	41,020	190.98	44.9	19,742	91.92	21.6	30,553	142.25	33.5
1975[d]	123,716	571.21	100.0	48,376	223.36	39.1	23,839	110.07	19.3	35,167	162.37	28.5
1976[d]	120,431	551.50	100.0	55,400	253.70	46.0	26,350	120.67	21.9	38,681	177.14	32.1
1977[d]	162,627	697.32	100.0	65,627	297.38	40.4	32,184	145.84	19.8	44,774	202.61	27.7

Note: Includes all expenditures for health services and supplies other than expenses for prepayment and administration and government public health activities.

[a]Includes dentists' services, other professional services, drugs and drug sundries, eyeglasses and appliances, nursing-home care and other health services.

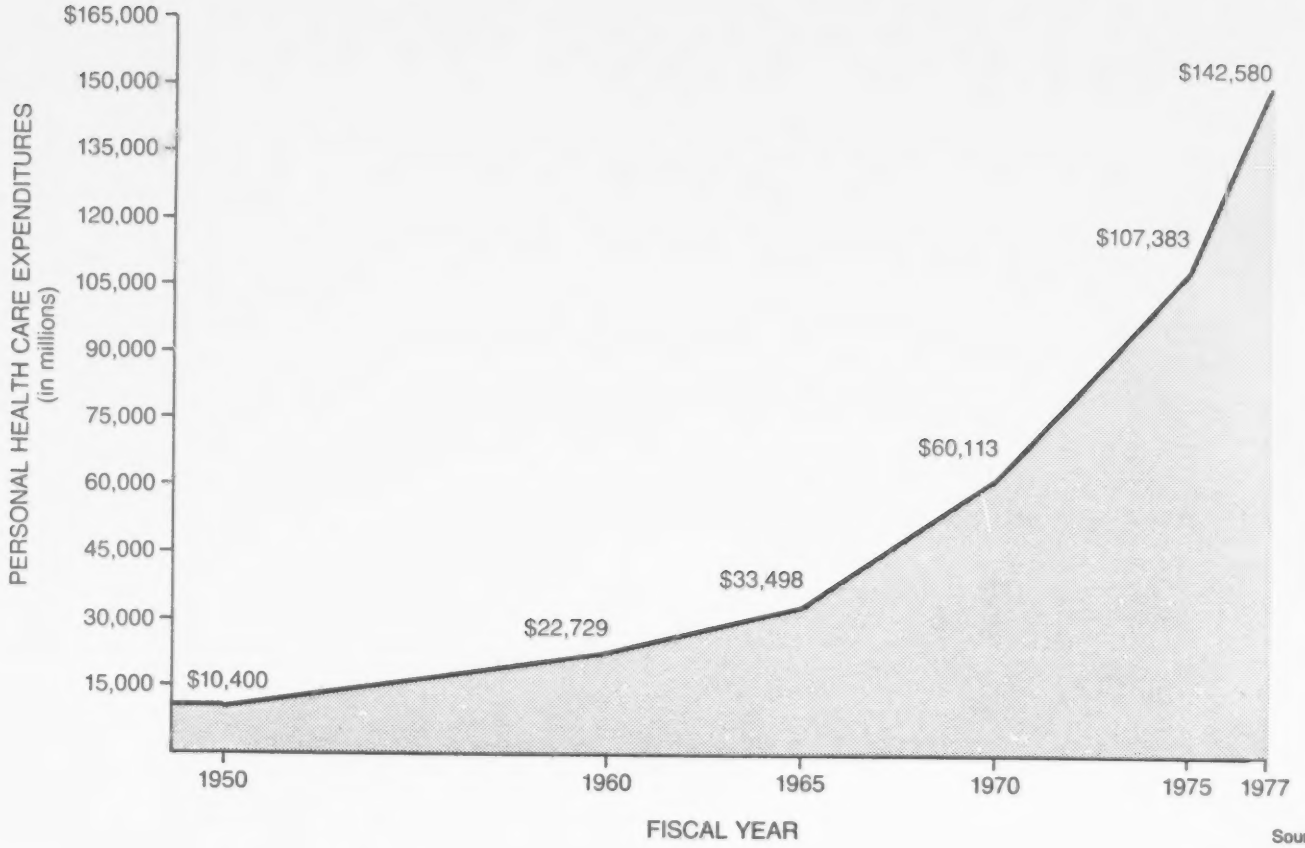
[b]In millions.

[c]Revised estimates.

[d]Preliminary estimates.

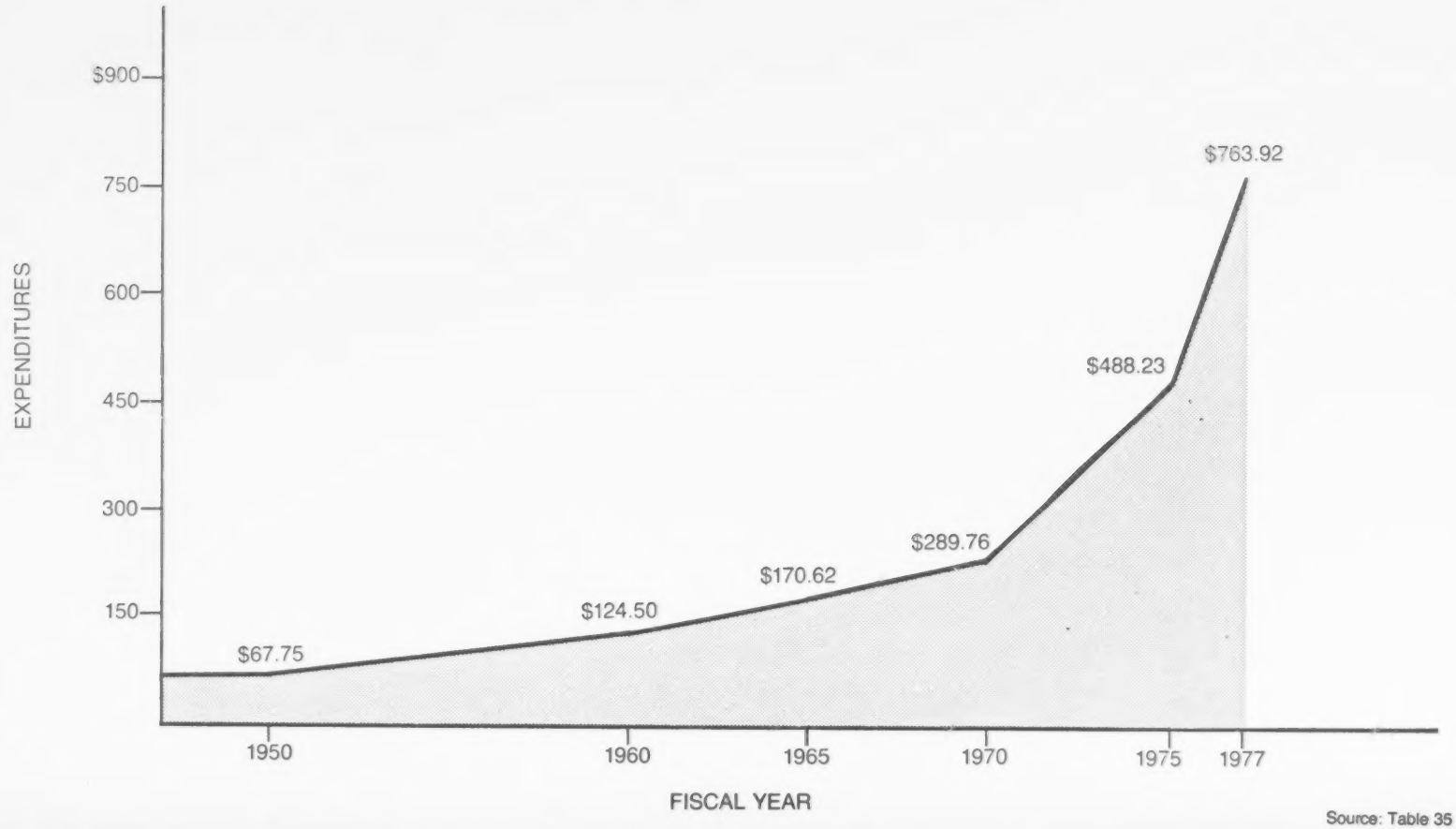
Source: Gibson, R.M., Fisher, C.R.: National Health Expenditures, Fiscal Year 1977. Social Security Bulletin 41:3-20, July 1978.

Figure 16—Personal Health Care Expenditures, Selected Fiscal Years 1950-1977



Source: Table 35

Figure 17—Per Capita Personal Health Care Expenditures, Selected Fiscal Years 1950-1977



Source: Table 35

Table 36—Estimated Total and Per Capita Personal Health Expenditures by Type of Expenditure for Three Age Groups, 1974 and 1977

Type of Expenditure	All Ages		Under 19		19-64		65 and Over	
	Total[a]	Per Capita	Total[a]	Per Capita	Total[a]	Per Capita	Total[a]	Per Capita
Total Expenditures--1974	$ 91,315	$425.15	$14,741	$201.06	$52,396	$437.80	$24,179	$1,109.54
Hospital Care	41,020	190.98	5,131	69.99	25,319	211.56	10,570	485.05
Physicians' Services	19,742	91.92	4,454	60.75	11,395	95.21	3,893	178.65
Dentists' Services	6,870	31.99	1,573	21.46	4,754	39.72	543	24.91
Other Professional Services	1,929	8.98	434	5.92	1,114	9.31	381	17.47
Drugs and Drug Sundries	9,416	43.84	1,803	24.59	5,299	44.28	2,315	106.21
Eyeglasses and Appliances	1,674	7.79	278	3.79	1,030	8.60	366	16.80
Nursing Home Care	7,450	34.69	134	1.83	1,617	13.51	5,699	261.53
Other Health Services	3,214	14.96	934	12.74	1,868	15.61	412	18.92
Total Expenditures--1977[b]	$142,586	$646.11	$17,909	$252.96	$83,422	$660.78	$41,256	$1,745.17
Hospital Care	65,637	297.38	6,333	89.45	41,109	325.62	18,185	769.25
Physicians' Services	32,184	145.84	4,924	69.55	20,115	159.33	7,145	302.23
Dentists' Services	10,020	45.41	2,144	30.29	6,854	54.29	1,022	43.24
Other Professional	3,212	14.56	305	4.31	2,091	16.56	816	34.51
Drugs and Drug Sundries	12,516	56.72	2,319	32.76	7,338	58.13	2,859	120.94
Eyeglasses and Appliances	2,086	9.45	270	3.81	1,505	11.92	312	13.20
Nursing Home Care	12,618	57.18	341	4.81	1,741	13.79	10,536	445.68
Other Health Services	4,322	19.59	1,272	17.97	2,669	21.14	381	16.12

[a] In millions.

[b] Preliminary estimates.

Source: Gibson, R.M., Fisher, C.R.: Age Difference in Health Care Spending, Fiscal Year 1977. Social Security Bulletin 42:3-16, January 1979.

Table 37—Social Welfare Expenditures Under Public Programs, Selected Fiscal Years 1950-1977

Fiscal Year	Total Social Welfare	Expenditures[a] by Program (millions)						
		Social Insurance	Public Aid	Health & Medical Programs	Veterans' Programs	Education	Housing	Other Social Welfare
1950	$ 23,508.4	$ 4,946.6	$ 2,496.2	$ 2,063.5	$ 6,865.7	$ 6,674.1	$ 14.6	$ 447.7
1960	52,293.3	19,306.7	4,101.1	4,463.8	5,479.2	17,626.2	176.8	1,139.4
1965	77,175.3	28,122.8	6,283.4	6,246.4	6,031.0	28,107.9	318.1	2,065.7
1970	145,855.7	54,691.2	16,487.8	9,906.8	9,078.0	50,845.5	701.2	4,145.2
1971	171,907.9	66,368.7	21,262.0	11,086.7	10,456.0	56,704.7	1,046.8	4,983.0
1972	191,357.0	74,809.4	26,078.3	12,865.7	11,522.4	59,385.1	1,332.4	5,363.9
1973	213,941.8	86,165.5	28,691.3	13,447.1	13,026.4	64,733.7	2,179.6	5,698.2
1974	239,313.6	98,953.0	31,520.3	14,953.1	14,112.4	70,499.3	2,554.0	6,721.5
1975[a]	290,064.0	123,013.0	40,706.0	17,788.0	17,019.0	80,833.0	3,172.0	7,533.0
1976[a]	331,898.0	145,604.0	47,985.0	19,207.0	18,958.0	87,721.0	3,371.0	9,052.0
1977[b]	362,339.0	161,254.0	52,429.0	21,027.0	19,015.0	94,640.0	4,417.0	9,556.0

Note: Represents expenditures under public law and from trust accounts, including administration, capital outlay, and some payments outside the United States.

[a]Revised estimates.

[b]Preliminary estimates.

Source: McMillan, D.W.: Social Welfare Expenditures, Fiscal Year 1977. Research and Statistics Note No. 15, December 29, 1978.

Table 38—Consumer Price Index, Selected Years 1950-1977

Item	Year										
	1950	1960	1965	1967	1970	1972	1973	1974	1975	1976	1977
All Items	72.1	88.7	94.5	100.0	116.3	125.3	133.1	147.7	161.2	170.5	181.5
Less Medical Care	NA	89.4	94.9	100.0	116.1	124.9	132.9	147.7	160.9	169.7	180.3
Medical Care	53.7	79.1	89.5	100.0	120.6	132.5	137.7	150.5	168.6	184.7	202.4
Food	74.5	88.8	94.4	100.0	114.8	123.5	141.4	161.7	175.4	180.8	192.4
Apparel and Upkeep	79.0	89.6	93.7	100.0	116.1	122.3	126.8	136.2	142.3	147.6	154.2
Housing	72.8	90.2	94.9	100.0	118.9	129.2	135.0	150.6	166.8	177.2	189.6
Transportation	68.2	89.6	95.9	100.0	112.7	119.9	123.8	137.7	150.6	165.5	177.2
Personal Care	68.3	90.1	95.2	100.0	113.2	119.8	125.2	137.3	150.7	160.5	170.9
Reading and Recreation	74.4	87.3	95.9	100.0	113.4	122.8	125.9	133.8	144.4	151.2	157.9
Other Goods and Services	69.9	87.8	94.2	100.0	116.0	125.5	129.0	137.2	147.4	153.3	159.2
All Services	58.9	83.8	92.2	100.0	121.6	133.3	139.1	152.0	166.6	180.4	194.3

Note: 1967 = 100; data are annual averages.

NA indicates not available.

Source: Consumer Price Indexes 1940-77. Social Security Bulletin 41:70, December 1978.

Table 39—Medical Care Component of the Consumer Price Index, Selected Years 1950-1977

Item	Year										
	1950	1960	1965	1967	1970	1972	1973	1974	1975	1976	1977
Medical Care Total	53.7	79.1	89.5	100.0	120.6	132.5	137.7	150.5	168.6	184.7	202.4
Medical Care Services	49.2	74.9	87.3	100.0	124.2	138.2	144.3	159.1	179.1	197.1	216.7
Physicians' Fees	55.2	77.0	88.3	100.0	121.4	133.8	138.2	150.9	169.4	188.5	206.0
Dentists' Fees	63.9	82.1	92.2	100.0	119.4	132.3	136.4	146.8	161.9	172.2	185.1
Exam, Prescription and Dispensing of Eyeglasses	73.5	85.1	92.8	100.0	113.5	124.9	129.5	138.6	149.6	158.9	168.2
Routine Lab Tests	NA	NA	94.8	100.0	111.4	120.4	122.8	135.4	151.4	160.5	169.4
Hospital Service Charges[a]	--	--	--	--	--	--	105.6	115.1	132.3	148.7	164.1
Semi-Private Room	30.3	57.3	75.9	100.0	145.4	173.9	182.1	201.5	236.1	268.6	299.5
Operating Room	NA	NA	82.9	100.0	142.4	168.6	179.1	201.3	239.4	274.8	311.3
X-Ray, Diagnostic Series, Upper G.I.	NA	NA	90.9	100.0	116.3	129.1	131.8	140.6	156.2	174.6	189.4
Prescriptions	92.6	115.3	102.0	100.0	101.2	100.9	100.5	102.9	109.3	115.2	122.1
Over-the Counter Items	NA	NA	98.0	100.0	106.2	111.3	112.4	117.5	130.1	138.9	148.5

[a]January 1972 = 100.

NA indicates not available.

Source: Medical Care Component of the Consumer Price Index, 1940-77. Social Security Bulletin 41:71, December 1978.

Table 40—Annual Percentage Change in the Consumer Price Index, 1965-1977

Item	Annual Percentage Change in the Annual Average CPI										
	1965 -66	1966 -67	1967 -68	1968 -69	1969 -70	1970 -71	1972 -73	1973 -74	1974 -75	1975 -76	1976 -77
All Items	2.9	2.9	4.2	5.4	5.9	4.3	6.2	11.0	9.1	5.8	6.1
Less Medical Care	3.0	2.4	4.1	5.4	5.8	4.1	6.4	11.1	8.9	5.5	5.9
Medical Care	4.4	7.1	6.1	6.9	6.3	6.5	3.9	9.3	12.0	9.5	8.8
Food	5.0	.9	3.6	5.1	5.5	3.0	14.5	14.4	8.4	3.1	6.0
Apparel and Upkeep	2.9	4.1	5.4	5.8	4.1	3.2	3.7	7.4	4.5	3.7	4.3
Housing	2.4	2.9	4.2	6.3	7.3	4.5	4.5	11.6	10.8	6.2	6.6
Transportation	1.4	2.9	3.2	3.9	5.1	5.2	3.3	11.2	9.4	9.9	6.7
Personal Care	2.0	3.0	4.2	4.9	3.6	3.2	4.5	9.7	9.8	6.5	6.1
Reading and Recreation	1.7	2.6	4.7	3.8	4.3	5.2	2.5	6.3	7.9	4.7	4.3
Other Goods and Services	3.2	2.9	4.6	4.3	6.3	4.2	2.8	6.4	7.4	4.0	3.8
All Services	3.9	4.4	5.2	6.9	8.1	5.6	4.4	9.3	9.6	8.3	7.2

Source: Consumer Price Indexes 1940-77. Social Security Bulletin 41:70, December 1978.

Financing Mechanisms for the Provision of Health Services

For the majority of the U.S. population, the present system for financing health care services--through private insurance and government programs—has been successful in providing access to care. The growth of private and government insurance and prepayment programs has been associated with increased expenditures and better protection against the financial consequences of unexpected illnesses.

- In 1976, 57.9 percent of total health expenditures were paid with private funds, down from 74.3 percent in 1966. 69.2 percent of personal health care expenditures were financed by private funds.
- In 1976, only 44.8 percent of personal expenditures for hospital care was financed by private funds. 75.7 percent of expenditures on physicians' services were private.
- Of the total personal health care expenditures for the aged, 66.9 percent ($27.6 billion) was paid by public funds. Medicare accounted for almost two-thirds of this amount. 88.3 percent of hospital expenditures and 59.5 percent of expenditures for physicians' services were public funds. In 1975, an estimated 168.4 million different Americans, or 79.3 percent of the civilian population were protected by some form of private health insurance.
- 47.0 million different Americans had private dental care insurance in 1975.
- In 1977, $34.9 billion was paid in private insurance benefits, compared to $15.7 billion in 1970.
- Public assistance vendor medical payments, or Medicaid, increased 49.0 percent from $10.4 billion in 1974 to $16.7 billion in 1977.

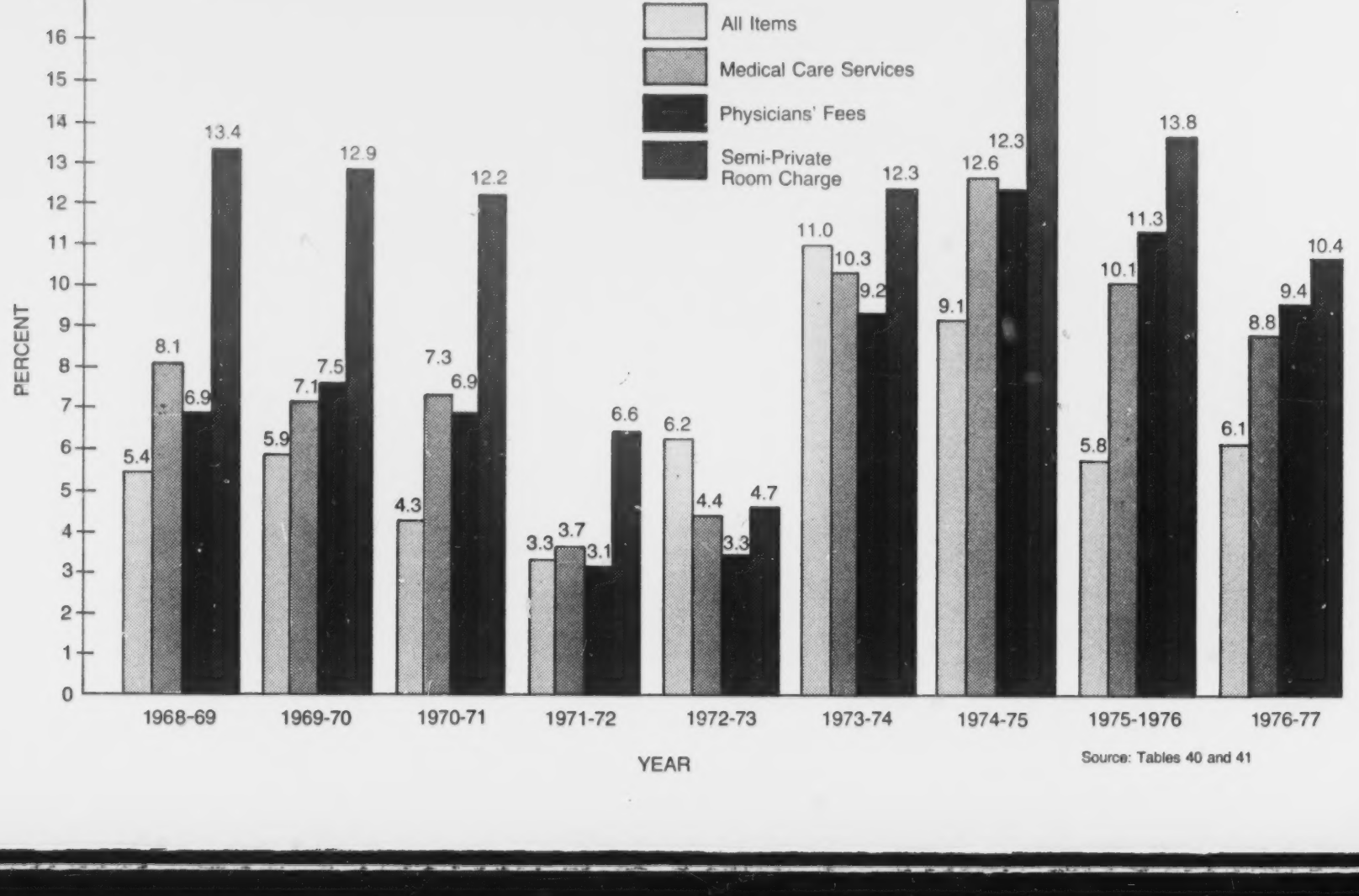
Table 41—Annual Percentage Change in the Medical Care Component of the Consumer Price Index, 1965-1977

Item	Annual Percentage Change in the Annual Average CPI										
	1965 -66	1966 -67	1967 -68	1968 -69	1969 -70	1970 -71	1972 -73	1973 -74	1974 -75	1975 -76	1976 -77
Medical Care Total	4.3	7.1	6.1	6.9	6.3	6.5	3.9	9.3	12.0	9.5	8.8
Medical Care Services	5.4	8.7	7.3	8.1	7.1	7.3	4.4	10.3	12.6	10.1	9.1
Physicians' Fees	5.8	7.1	5.6	6.9	7.5	6.9	3.3	9.2	12.3	11.3	9.5
Dentists' Fees	3.3	5.0	5.5	7.0	5.8	6.4	3.1	7.6	10.3	6.4	7.0
Exam, Prescription and Dispensing of eyeglasses	2.7	4.9	3.2	4.3	5.5	6.0	3.7	7.0	7.9	6.2	5.6
Routine Lab Tests	2.1	3.3	3.5	3.9	3.6	4.2	2.0	10.3	11.8	6.0	5.3
Hospital Service Charges[a]	--	--	--	--	--	--	3.5	9.0	14.9	12.4	9.4
Semi-Private Room	10.0	6.9	13.6	13.4	12.9	12.2	4.7	10.7	17.2	13.8	10.4
Operating Room	6.9	12.9	11.5	15.4	10.6	9.7	6.2	12.4	18.9	14.8	11.8
X-Ray, Diagnostic Series, Upper G.I.	3.5	6.3	4.3	4.8	6.4	7.5	2.1	6.7	11.1	11.8	7.9
Prescriptions	-0.2	-1.8	-1.7	1.3	1.6	0.1	-0.4	2.4	6.2	5.4	5.7
Over-the-Counter Items	1.0	1.0	2.5	0.7	2.9	3.9	1.0	4.5	10.7	6.8	6.5

[a]Index established January 1972.

Source: Medical Care Component of the Consumer Price Index, 1940-77. Social Security Bulletin 41:71, December 1978.

Figure 18—Annual Percentage Change for Selected Items in the Consumer Price Index: 1968-1977



Source: Tables 40 and 41

Table 42—National Health Expenditures by Source of Funds, Selected Fiscal Years 1935-1977

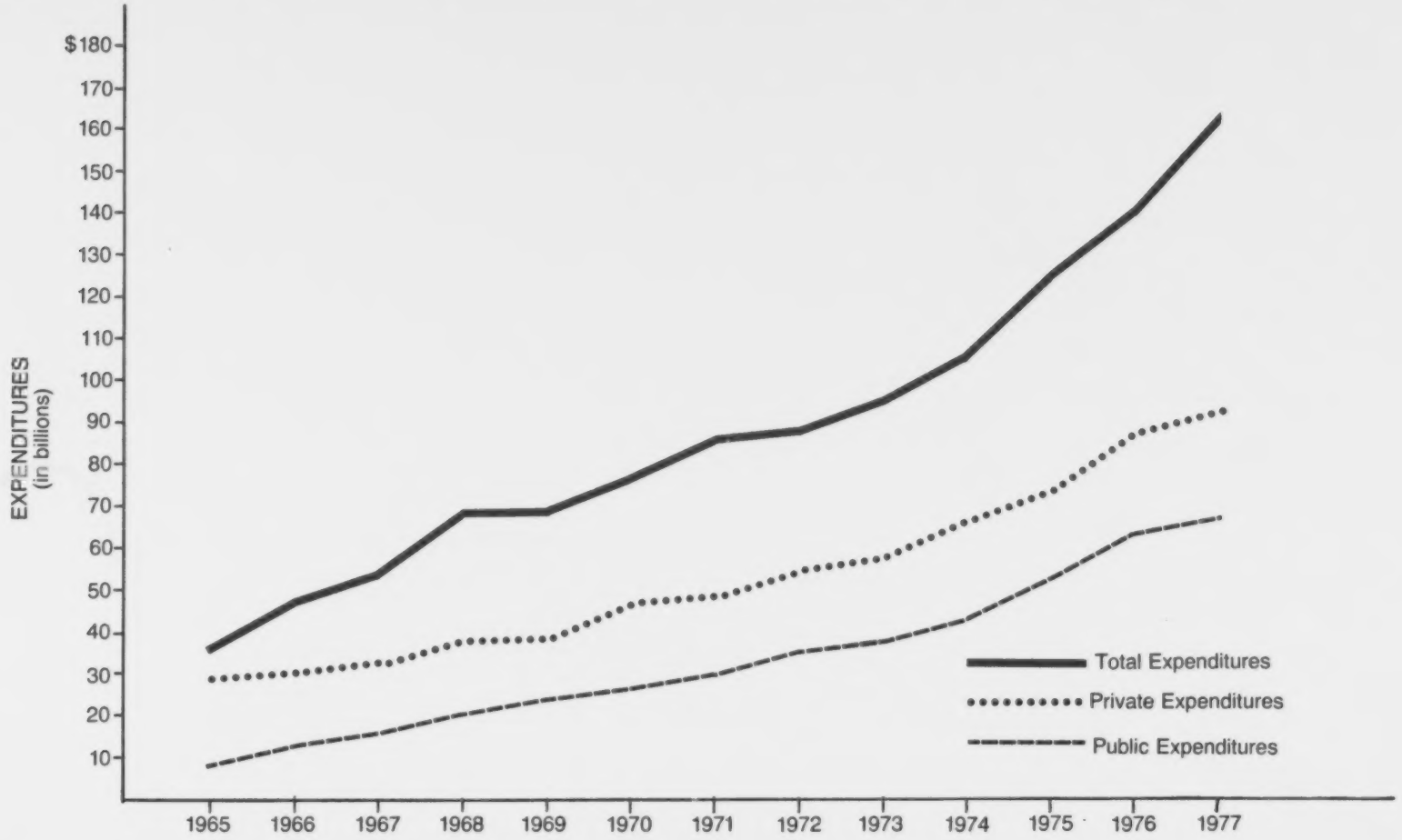
Fiscal Year	Health Expenditures								
	Total			Private			Public		
	Amount (in millions)	Per Capita	Percent of GNP	Amount (in millions)	Per Capita	Percent of Total	Amount (in millions)	Per Capita	Percent of Total
1935	$ 2,846	$ 22.04	100.0	$2,303	$ 17.84	80.9%	$ 543	$ 4.21	19.1
1940	3,883	28.98	100.0	3,101	23.14	79.9	782	5.84	20.1
1950	12,027	78.35	100.0	8,962	58.38	74.5	3,065	19.97	25.5
1955	17,330	103.76	100.0	12,909	77.29	74.5	4,421	26.47	25.5
1960	25,856	141.63	100.0	19,461	106.60	75.3	6,395	35.03	24.7
1965	38,892	197.75	100.0	29,357	149.27	75.5	9,535	48.48	24.5
1967	47,879	237.93	100.0	32,026	159.15	66.9	15,853	78.78	33.1
1968	53,765	264.37	100.0	33,725	165.83	62.7	20,040	98.54	37.3
1969	69,617	295.20	100.0	37,680	183.50	62.2	22,937	111.70	37.8
1970	69,201	333.57	100.0	43,810	211.18	63.3	25,391	122.39	36.7
1971	77,162	368.25	100.0	48,387	230.92	62.7	28,775	137.32	37.3
1972	86,687	409.71	100.0	53,214	251.50	61.4	33,473	158.20	38.6
1973	95,383	447.31	100.0	58,715	275.35	61.6	36,668	171.96	38.4
1974	106,321	495.01	100.0	64,809	301.74	61.0	41,512	193.27	39.0
1975[a]	123,713	571.21	100.0	71,348	329.42	57.7	53,368	241.79	42.3
1976[a]	141,013	645.76	100.0	80,831	370.16	57.3	60,182	275.60	42.7
1977[b]	162,627	736.92	100.0	94,185	426.78	57.9	68,442	310.13	42.1

[a]Revised estimates.

[b]Preliminary estimates.

Source: Gibson, R.M., Fisher, C.R.: National Health Expenditures, Fiscal Year 1977. Social Security Bulletin 41:3-20, July 1978.

Figure 19—National Health Expenditures by Source of Funds: Fiscal Years 1965-1977



Source: Table 42

Table 43—National Health Expenditures by Type of Expenditure and Source of Funds, Fiscal Year 1977

Type of Expenditure	Total	Source of Funds					
		Private			Public		
		Total	Consumer	Other	Total	Federal	State & Local
Total	$162,627	$94,185	$87,807	$6,378	$68,442	$46,563	$21,879
Health Services & Supplies	153,887	91,294	87,807	3,487	62,594	42,542	20,051
Hospital Care	65,627	29,427	27,887	1,540	36,199	25,715	10,484
Physicians' Services	32,184	24,360	24,318	42	7,824	5,808	2,016
Dentists' Services	10,020	9,520	9,520	--	500	310	190
Other Professional Services	3,212	2,288	2,175	113	924	683	241
Drugs and Drug Sundries	12,516	11,373	11,373	--	1,143	614	529
Eyeglasses and Appliances	2,086	1,956	1,956	--	130	66	64
Nursing-Home Care	12,618	5,434	5,343	91	7,184	4,204	2,980
Other Health Services	4,322	1,105	--	1,105	3,217	2,424	793
Expenses for Prepayment and Administration	7,572	5,829	5,233	596	1,743	1,430	313
Government Public Health Activities	3,729	--	--	--	3,729	1,289	2,440
Research & Medical Facilities Construction	8,739	2,891	--	2,891	5,848	4,020	1,828
Research[a]	3,684	284	--	284	3,400	3,139	261
Construction	5,055	2,607	--	2,607	2,448	881	1,567

Note: Preliminary estimates. Expenditures in millions of dollars. Components may not add to total due to rounding.

[a]Research expenditures of drug companies includes in expenditures for drugs and drug sundries and excluded from research expenditures.

Source: Gibson, R.M., Fisher, C.R.: National Health Expenditures, Fiscal Year 1977. Social Security Bulletin 41:3-20, July 1978.

Table 44—Aggregate, Per Capita, and Percentage Distribution of Personal Health Care Expenditures by Source of Funds, Selected Years 1950-1977

Fiscal Year	Total			Source of Funds					
				Private			Public		
	Aggregate (in millions)	Percentage	Per Capita	Aggregate (in millions)	Percentage	Per Capita	Aggregate (in millions)	Percentage	Per Capita
1950	$ 10,400	100.0	$ 67.75	$ 8,298	79.8	$ 54.05	$ 2,102	20.2	$ 13.69
1955	15,231	100.0	91.19	11,762	77.2	70.42	3,469	22.8	20.77
1960	22,729	100.0	124.50	17,799	78.3	97.50	4,930	21.7	27.00
1965	33,498	100.0	170.32	26,540	79.2	134.94	6,958	20.8	35.28
1967	41,343	100.0	205.45	28,883	69.9	143.53	12,461	30.1	61.92
1969	52,690	100.0	256.59	33,978	64.5	165.51	18,705	35.5	91.09
1970	60,113	100.0	189.76	39,568	65.8	190.73	20,545	34.2	99.03
1971	67,228	100.0	320.84	43,999	65.4	209.98	23,229	34.6	110.86
1972	74,828	100.0	353.66	47,796	63.9	225.90	27,032	36.1	127.76
1973	82,490	100.0	386.84	52,428	63.6	245.87	30,062	36.4	140.98
1974[b]	91,315	100.0	425.15	57,259	62.7	266.59	34,056	37.3	158.56
1975[b]	105,745	100.0	488.23	63,779	60.3	294.47	41,966	39.7	193.71
1976[a]	120,431	100.0	551.50	72,013	59.8	329.78	48,417	40.2	221.72
1977[a]	162,627	100.0	736.92	94,185	56.6	--	68,442	43.4	

Note: Includes all expenditures for health services and supplies other than expenses for prepayment and administrative and government public health activities.

[a]Preliminary estimates.

[b]Revised estimates.

Source: Gibson, R.M., Fisher, C.R.: National Health Expenditures, Fiscal Year 1977. Social Security Bulletin 41:3-20, July 1978.

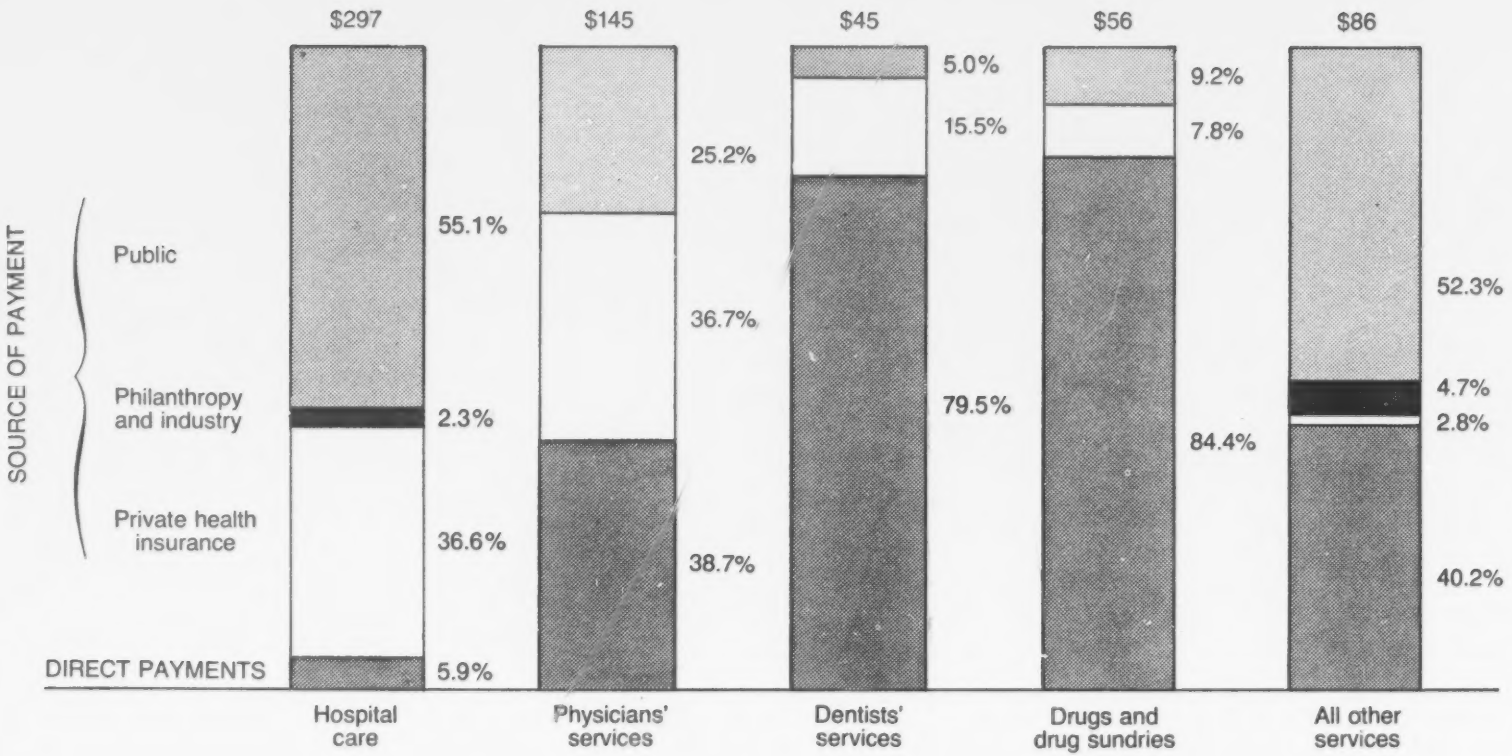
Table 45—Total and Per Capita Personal Health Care Expenditures by Type of Expenditure and Source of Payment, 1977

Type of Expenditure	Total	Direct Payments	Third-Party Payments			
			Total	Private Health Insurance	Government	Philanthropy and Industry
Total (millions)	$142,586	$43,274	$99,312	$39,299	$57,121	$2,891
Hospital Care	65,627	3,866	61,761	24,021	36,199	1,540
Physicians' Services	32,184	12,502	19,682	11,817	7,823	42
Dentists' Services	10,020	7,965	2,055	1,554	501	--
Other Professional Services	3,212	1,398	1,814	777	924	113
Drugs and Drug Sundries	12,516	10,401	2,115	973	1,149	--
Eyeglasses and Appliances	2,086	1,918	169	39	130	--
Nursing-Home Care	12,618	5,226	7,393	118	7,184	91
Other Health Services	4,322	--	4,322	--	3,217	1,105
Total Per Capita	$ 646.11	$196.09	$450.02	$178.02	$258.84	$13.10
Hospital Care	297.38	17.52	279.86	108.85	164.03	6.98
Physicians' Services	145.84	56.64	89.19	53.55	35.45	.19
Dentists' Services	45.41	36.10	9.31	7.04	2.27	--
Other Professional Services	14.56	6.34	8.22	3.52	4.19	.51
Drugs and Drug Sundries	56.72	47.13	9.59	4.41	5.18	--
Eyeglasses and Appliances	9.45	8.69	.77	.18	.59	--
Nursing-Home Care	57.18	23.68	33.49	.53	32.55	.41
Other Health Services	19.59	--	19.59	--	14.58	5.01

Note: Preliminary estimates.

Source: Gibson, R.M., Fisher, C.R.: National Health Expenditures, Fiscal Year 1977. Social Security Bulletin 41:3-20 & July 1978.

Figure 20—Percentage Distribution of Per Capita Personal Health Care Expenditures by Type of Expenditure and Source of Payment, 1977



Source: Table 45

Table 46—Personal Health Care Expenditures for Three Age Groups by Type of Expenditure and Source of Funds, 1975 and 1977

Amount (millions)

Type of Expenditures	Under 19								
	1974			1975[b]			1976[a]		
	Total	Private	Public	Total	Private	Public	Total	Private	Public
Total Personal Health Care	$14,741	$10,875	$ 3,866	$14,393	$ 9,681	$4,711	$17,909	$12,392	$5,517
Hospital Care	5,131	3,077	2,054	5,007	2,635	2,372	6,333	3,448	2,885
Physicians' Services	4,454	3,918	536	3,928	3,201	727	4,924	4,180	744
Dentists' Services	1,573	1,444	129	1,788	1,590	198	2,144	1,925	220
Other Professional Services	434	350	85	248	149	100	305	169	136
Drug and Drug Sundries	1,803	1,700	103	1,843	1,708	136	2,319	2,161	158
Eyeglasses and Appliances	278	263	15	247	228	19	270	248	21
Nursing-Home Care	134	66	68	190	91	99	341	162	178
Other Health Services	934	57	876	1,141	80	1,061	1,272	98	1,174

(continues)

Table 46 (continued)

Type of Expenditures	Amount (millions) 19-64								
	1974			1975[b]			1976[a]		
	Total	Private	Public	Total	Private	Public	Total	Private	Public
Total Personal Health Care	$ 52,396	$38,132	$14,264	$65,006	$45,617	$19,389	$83,422	$59,449	$23,973
Hospital Care	25,319	15,703	9,617	31,238	17,091	14,147	41,109	23,840	17,269
Physicians' Services	11,395	9,654	1,741	15,523	13,237	2,286	20,115	17,291	2,824
Dentists' Services	4,754	4,588	166	5,455	5,246	209	6,854	6,620	234
Other Professional Services	1,114	944	170	1,595	1,394	201	2,091	1,794	298
Drugs and Drug Sundries	5,299	4,943	356	6,619	6,156	463	7,338	6,790	549
Eyeglasses and Appliances	1,030	961	69	1,308	1,224	85	1,505	1,405	100
Nursing-Home Care	1,617	792	825	1,131	479	652	1,741	737	1,004
Other Health Services	1,868	548	1,320	2,136	789	1,347	2,669	973	1,695

(continues)

Table 46 (continued)

Type of Expenditures	Amount (millions) 65 and Over 1974 Total	1974 Private	1974 Public[c]	1975 Total	1975 Private	1975 Public[c]	1977[a] Total	1977[a] Private	1977[a] Public[c]
Total Personal Health Care	$ 24,179	$8,252	$15,927	$31,266	$10,331	$20,935	$41,256	$13,624	$27,631
Hospital Care	10,570	815	9,756	13,728	1,621	12,107	18,185	2,140	16,045
Physicians' Services	3,893	1,511	2,382	5,103	1,944	3,159	7,145	2,889	4,255
Dentists' Services	543	512	30	792	751	41	1,022	976	46
Other Professional Services	381	203	178	621	371	250	816	325	490
Drug and Drug Sundries	2,315	2,041	273	2,119	1,745	374	2,859	2,423	436
Eyeglasses and Appliances	366	359	7	267	259	8	312	303	9
Nursing-Home Care	5,699	2,791	2,908	8,299	3,614	4,685	10,536	4,535	6,001
Other Health Services	412	20	393	339	27	312	381	33	348

[c]Continued on next page.

Table 46 (continued)

Amount (millions)

Over 65 (continued)

Type of Expenditure	1974 Total Public	1974 Medicare	1974 Medicaid	1974 Other	1975[b] Total Public	1975[b] Medicare	1975[b] Medicaid	1975[b] Other	1976[a] Total Public	1976[a] Medicare	1976[a] Medicaid	1976[a] Other
Total	$15,927	$9,858	$3,708	$2,361	$20,935	$13,373	$5,373	$2,189	$27,631	$18,282	$6,890	$2,459
Hospital Care	9,756	7,322	368	2,066	12,107	9,998	471	1,638	16,054	13,533	638	1,874
Physician Services	2,382	2,190	158	34	3,159	2,894	216	50	4,255	3,975	221	60
Dentists' Services	30	--	20	10	41	--	28	13	46	--	31	15
Other Prof. Services	178	134	42	2	250	206	40	4	490	425	61	4
Drugs & Drug Sundries	273	--	271	3	374	--	352	22	436	--	418	18
Eyeglasses & Appliances	7	--	--	7	8	--	--	8	9	--	--	9
Nursing-Home Care	2,908	212	2,603	93	4,685	276	4,080	329	6,001	349	5,325	328
Other Health Services	393	--	246	147	312	--	186	125	348	--	196	152

[a]Preliminary estimates. [b]Revised estimates.

Source: Gibson, R.M., Fisher, C.R.: Age Differences in Health Care Spending, Fiscal Year 1977. Social Security Bulletin 42:316, January 1979.

Table 47—Percentage Distribution of Personal Health Care Expenditures for Three Age Groups by Type of Expenditure and Source of Funds, 1974-1977

Type of Expenditure	Under 19								
	1974			1975			1977[a]		
	Total	Private	Public	Total	Private	Public	Total	Private	Public
Total Personal Care	100.0	73.8	26.2	100.0	67.3	32.7	100.0	69.2	30.8
Hospital Care	100.0	60.0	40.0	100.0	52.6	47.4	100.0	54.4	45.6
Physicians' Services	100.0	88.0	12.0	100.0	81.5	18.5	100.0	84.9	15.1
Dentists' Services	100.0	91.8	8.2	100.0	88.9	11.1	100.0	89.8	10.2
Other Professional Services	100.0	80.5	19.5	100.0	60.1	39.9	100.0	55.4	44.6
Drugs and Drug Sundries	100.0	94.3	5.7	100.0	92.7	7.3	100.0	93.2	6.8
Eyeglasses and Appliances	100.0	94.6	5.4	100.0	92.3	7.7	100.0	91.8	8.2
Nursing-Home Care	100.0	49.3	50.7	100.0	47.9	52.1	100.0	47.5	52.5
Other Health Services	100.0	5.2	93.8	100.0	7.0	93.0	100.0	7.7	92.3

Table 47 (continued)

Type of Expenditure	19-64								
	1974			1975[b]			1976[a]		
	Total	Private	Public	Total	Private	Public	Total	Private	Public
Total Personal Care	100.0	72.8	27.2	100.0	70.2	29.8	100.0	71.3	29.7
Hospital Care	100.0	62.0	38.0	100.0	54.7	45.3	100.0	58.0	42.0
Physicians' Services	100.0	84.7	15.3	100.0	85.3	14.7	100.0	86.0	14.0
Dentists' Services	100.0	96.5	3.5	100.0	96.2	3.8	100.0	96.6	3.4
Other Professional Services	100.0	84.7	15.3	100.0	87.4	12.6	100.0	85.8	14.2
Drugs and Drug Sundries	100.0	93.3	6.7	100.0	93.0	7.0	100.0	92.5	7.5
Eyeglasses and Appliances	100.0	93.3	6.7	100.0	93.6	6.4	100.0	93.3	6.7
Nursing-Home Care	100.0	49.0	51.0	100.0	42.3	57.7	100.0	42.3	57.7
Other Health Services	100.0	29.3	70.7	100.0	36.9	63.1	100.0	36.4	63.6

Table 47 (continued)

Type of Expenditure	Over 65								
	1974			1975			1976[a]		
	Total	Private	Public	Total	Private	Public	Total	Private	Public
Total Personal Care	100.0	34.1	65.9	100.0	33.0	67.0	100.0	33.0	67.0
Hospital Care	100.0	7.7	92.3	100.0	11.8	88.2	100.0	11.8	88.2
Physicians' Services	100.0	38.8	61.2	100.0	38.1	61.9	100.0	40.4	39.6
Dentists' Services	100.0	94.4	5.6	100.0	94.8	5.2	100.0	95.5	4.5
Other Professional Services	100.0	53.3	46.7	100.0	59.7	40.3	100.0	39.8	40.2
Drugs and Drug Sundries	100.0	88.2	11.8	100.0	82.3	17.7	100.0	84.7	15.3
Eyeglasses and Appliances	100.0	98.1	1.9	100.0	97.0	3.0	100.0	97.1	2.9
Nursing-Home Care	100.0	49.9	51.0	100.0	43.5	56.5	100.0	43.0	57.0
Other Health Services	100.0	4.8	95.2	100.0	8.0	92.0	100.0	8.7	91.3

Table 47 (continued)

Type of Expenditure	Over 65 (continued)											
	1974				1975[b]				1977[a]			
	Total Public	Medi-care	Medi-caid	Other	Total Public	Medi-care	Medi-caid	Other	Total Public	Medi-care	Medi-caid	Other
Total Personal Care	65.9	40.8	15.3	9.8	66.9	42.3	17.2	7.0	67.0	44.3	16.7	6.0
Hospital Care	92.3	69.3	3.5	19.5	88.2	72.8	3.4	11.9	88.2	74.4	3.5	10.3
Physicians' Services	61.2	56.3	4.1	.9	61.9	56.7	4.2	0.9	59.5	55.6	3.1	0.8
Dentists' Services	5.6	--	3.7	1.9	5.2	--	3.5	1.7	4.5	--	3.0	1.5
Other Professional Services	46.7	35.2	11.1	.4	40.2	53.2	6.4	0.7	60.0	52.1	7.5	0.4
Drugs and Drug Sundries	11.8	--	11.7	.1	17.6	--	16.6	1.0	15.2	--	14.6	.6
Eyeglasses and Appliances	1.9	--	--	1.9	3.0	--	--	3.0	2.9	--	--	2.9
Nursing-Home Care	51.0	3.7	45.7	1.6	56.4	3.3	49.2	3.9	56.9	3.3	50.5	3.1
Other Health Services	95.2	--	59.6	36.6	92.0	--	54.9	37.1	91.3	--	51.4	39.9

[a]Preliminary estimates.

[b]Revised estimates.

Source: Gibson, R.M., Fisher, C.R.: Age Difference in Health Care Spending, Fiscal Year 1977. Social Security Bulletin 42:3-16, January 1979.

Table 48—Expenditures Under Medicaid (Public Assistance Vendor Medical Payments) by Type of Expenditure, Fiscal Years 1974, 1975, 1977

Type of Expenditure	Expenditures (millions)					
	FY 1974		FY 1975		FY 1977[a]	
	Amount	Percent	Amount	Percent	Amount	Percent
Total	$10,372	100.0%	$12,984	100.0%	$17,103	100.0%
Hospital Care	3,522	33.9	4,229	32.6	5,964	34.9
Physicians' Services	1,313	12.7	1,544	11.9	1,827	10.7
Dentists' Services	253	2.4	324	2.5	398	2.3
Other Professional Services	206	2.0	278	2.1	325	1.9
Drugs & Drug Sundries	674	6.5	785	6.0	1,016	5.9
Eyeglasses & Appliances	--	--	--	--	--	--
Nursing-Home Care	3,462	33.4	4,579	35.3	6,380	37.3
Other Health Services	508	4.9	696	5.4	346	2.0
Administration	434	4.2	549	4.2	846	4.9
Government Public Health Activities	--	--	--	--	--	--

Note: Includes funds paid into Medicare trust funds by states under "buy-in" agreements to cover premiums for public assistance recipients and for persons who are medically indigent.

[a]Preliminary estimates.

Source: Gibson, R.M., Fisher, C.R.: National Health Expenditures, Fiscal Year 1977. Social Security Bulletin 41:3-20 and July 1978.

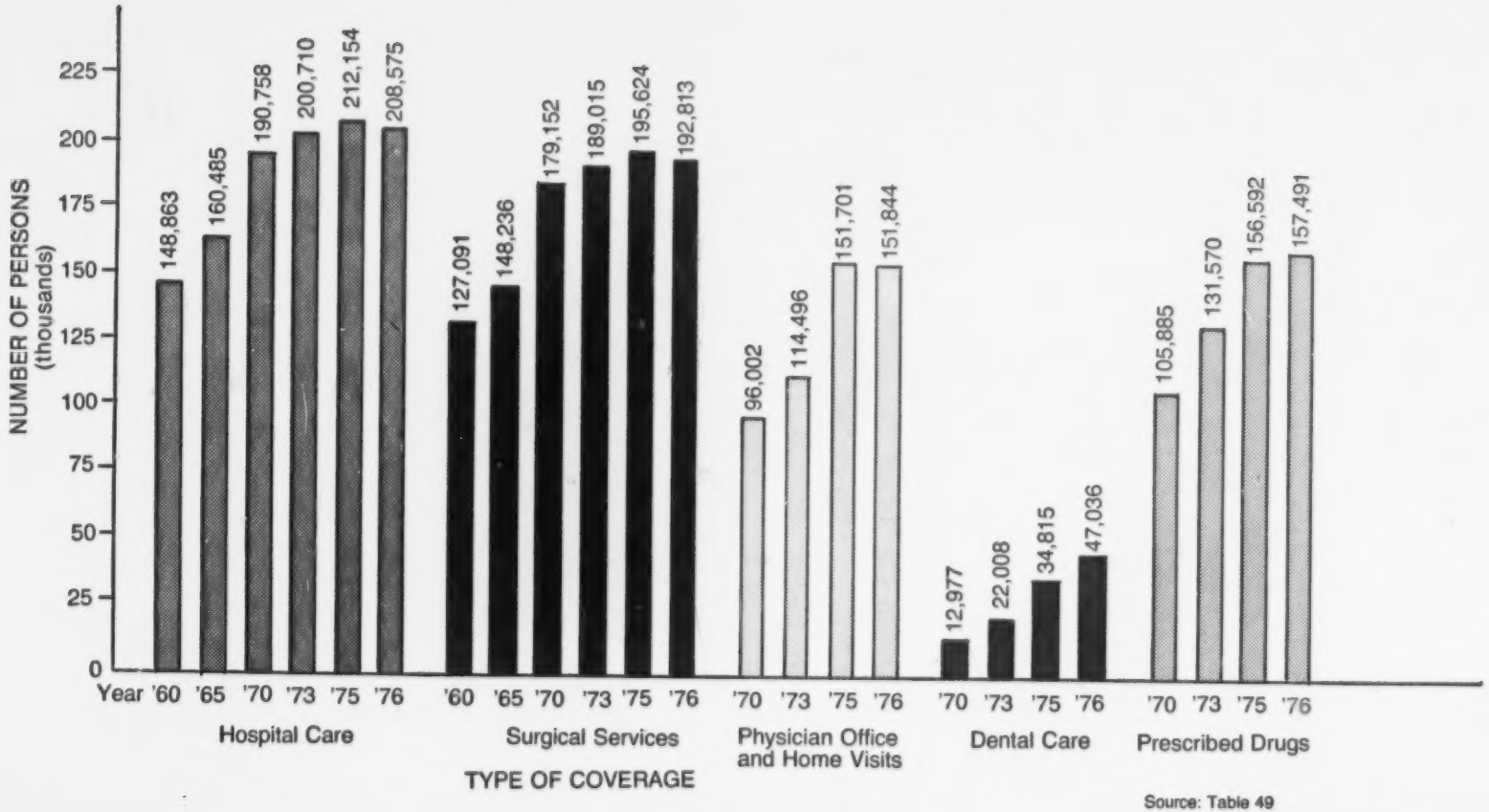
Table 49—Gross Enrollment Under Private Health Insurance Plans by Type of Coverage, Selected Years 1950-1976

Year	Hospital Care	Physician Surgical Services	Physician Office and Home Visits[a]	Dental Care[a]	Prescribed Drugs[a]	Private-duty Nursing[a]	Visiting-Nurse Service[a]	Nursing-Home Care[a]
	(Thousands)							
1950	81,691	55,950						
1955	113,976	98,000						
1960	148,863	127,091						
1965	160,485	148,236						
1970	190,758	179,152	96,002	12,977	105,885	105,118	112,073	32,989
1972	197,195	183,936	104,735	18,750	117,082	114,269	121,520	46,315
1973	200,710	189,015	114,496	22,008	131,570	124,637	128,678	70,469
1974	206,646	193,172	150,612	32,896	149,244	148,113	143,382	71,202
1975	212,154	195,624	151,701	34,815	156,592	153,076	148,475	71,505
1976	208,575	192,813	151,844	47,036	157,491	153,817	152,566	71,782
Estimates of Net Number of Different Persons and Percent of Civilian Population Covered:								
Number:								
1974	163,396	159,518	126,235	32,896	142,246	140,353	135,751	69,601
1975	168,448	164,986	127,735	34,477	149,276	145,927	141,561	70,146
1976	164,235	162,179	124,124	46,578	150,222	147,311	145,863	70,422
Percent:								
1974	77.6	75.7	59.9	15.6	67.5	66.6	64.5	33.0
1975	79.3	77.7	60.1	16.2	70.3	68.7	66.7	33.0
1976	76.8	75.8	58.0	21.8	70.2	68.9	68.2	32.9

[a]Data not available before 1966.

Source: Carroll, M.S.: Private Health Insurance Plans in 1976: An Evaluation. Social Security Bulletin 41:3-16 September 1978.

Figure 21—Gross Enrollments Under Private Health Insurance Plans by Type of Coverage, Selected Years 1970-1976



Source: Table 49

Table 50—Private Health Insurance Benefit Expenditures by Type of Insurer, Selected Years 1950-1976

	Amount (millions)							
		Blue Cross-Blue Shield			Insurance Companies			
Year	All Insurers	Total	Blue Cross	Blue Shield	Total	Group	Individual Policies	Independent Plans
1950	$ 991.9	$ 490.6	$ 382.9	$ 107.7	$ 400.0	$ 257.0	$ 143.0	$ 101.3
1955	2,535.7	1,146.7	832.2	314.5	1,179.0	858.0	321.0	210.0
1960	4,996.3	2,287.1	2,646.2	640.9	2,389.0	1,901.0	488.0	320.2
1965	8,728.9	3,912.9	2,853.4	1,059.5	4,265.0	3,413.0	852.0	551.0
1970	15,743.5	7,060.2	5,009.3	2,050.9	7,656.0	6,510.0	1,146.0	1,027.4
1972[a]	19,429.2	8,990.9	6,501.3	2,489.6	9,120.3	7,754.2	1,366.0	1,318.3
1973[a]	21,494.5	10,004.2	7,187.3	2,816.9	9,943.2	8,387.0	1,556.2	1,547.1
1974[a]	25,059.2	11,639.5	8,311.1	3,328.4	11,547.3	10,013.8	1,533.5	1,872.4
1975[a]	29,333.9	14,192.0	10,075.9	4,116.1	12,957.6	11,388.6	1,569.0	2,184.3
1976[b]	34,985.1	16,226.5	11,624.9	4,601.6	16,280.2	14,549.0	1,731.2	2,478.4

Source: Caroll M.S.: Private Health Insurance Plans in 1976: An Evaluation. Social Security Bulletin 41:316, September 1978.

[a]Revised estimates.

[b]Preliminary estimates.

Medical Education and Medical Manpower

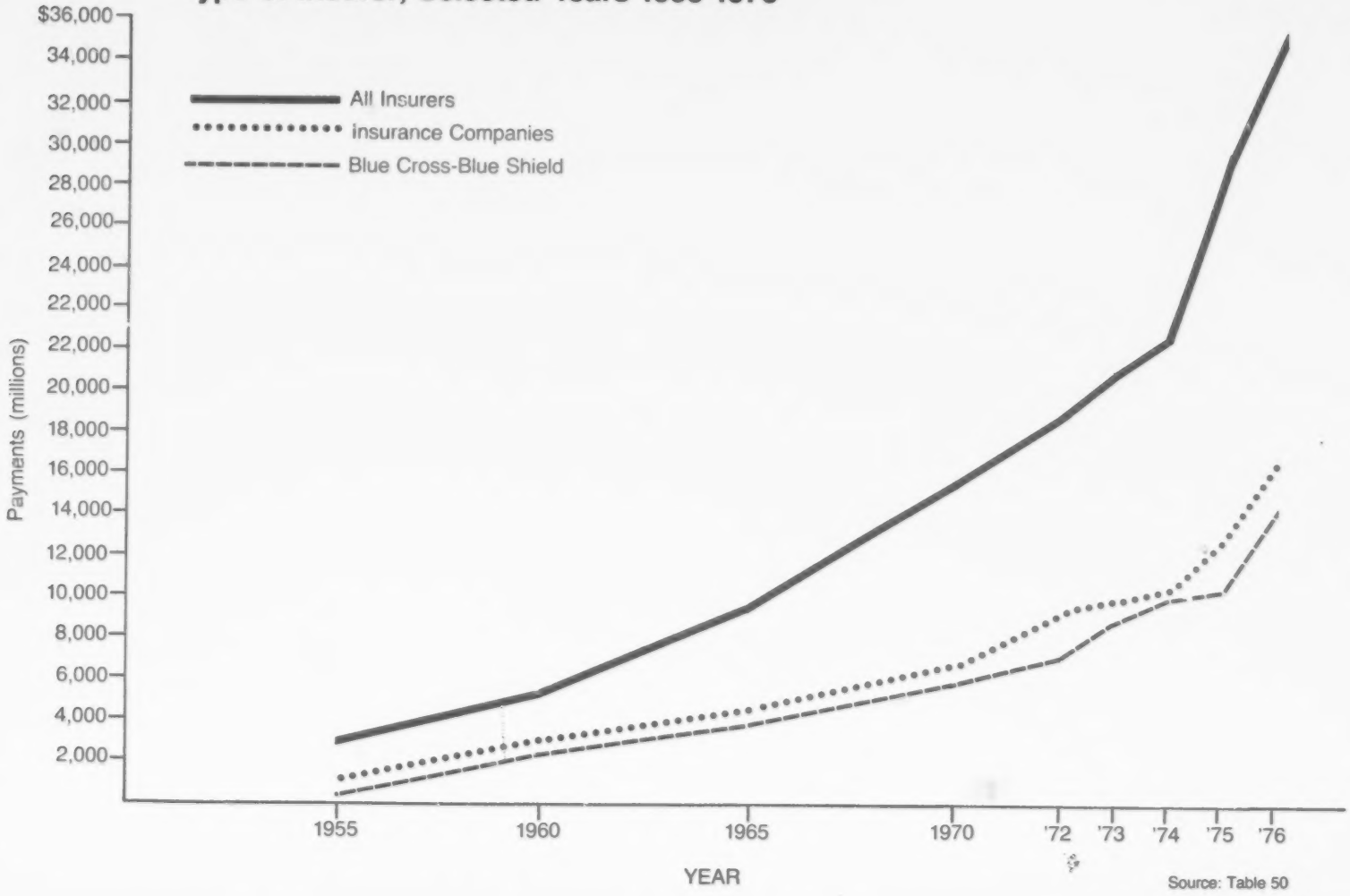
The U.S. medical education system has provided the professional training for the majority of physicians in the United States. Hence, the supply of physicians reflects the number of characteristics of students graduated from that system. The requirements for medical licensure in this country, however, affect all physicians practicing in the United States regardless of country of training.

The past decade has witnessed not only substantial growth in the number of medical schools and students graduated, but also significant changes in the type of student enrolled. Women, blacks, foreign students, and other minorities are represented in increasing proportions of medical school graduates and licentiates.

The following data summarize some characteristics of the medical education and licensure system in the United States.

- The number of graduates from U.S. medical and basic science schools was 14,393 in 1977-1978, up 66.2 percent from the 1969-1970 year.
- The number of women graduates from medical schools represented 21.4 percent of all graduates in 1977-1978, compared to 8.4 percent in 1969-1970. The proportion of women enrolled in medical school has increased from 9.0 percent in 1969-1970 to 25.7 percent in 1977-1978.
- U.S. minority groups enrolled in medical schools increased from 6.6 percent of total enrollment in 1972-1973 to 9.1 percent in 1977-1978.
- The proportion of foreign nationals enrolled in the U.S. medical schools declined from 1.3 percent in 1972-1973 to 0.4 percent in 1977-1978.
- Although 29.9 percent of all U.S. families in 1976-1977 earned under $10,000, medical students from families in this income group constituted only 16.4 percent of all medical students enrolled.
- In 1977, 32.2 percent of new medical licentiates were graduates of foreign medical schools. The highest proportion of FMG licentiates (96.0 percent) was recorded in 1972 and has been decreasing since that time.

Figure 22—Private Health Insurance Benefit Expenditures by Type of Insurer, Selected Years 1955-1976



Source: Table 50

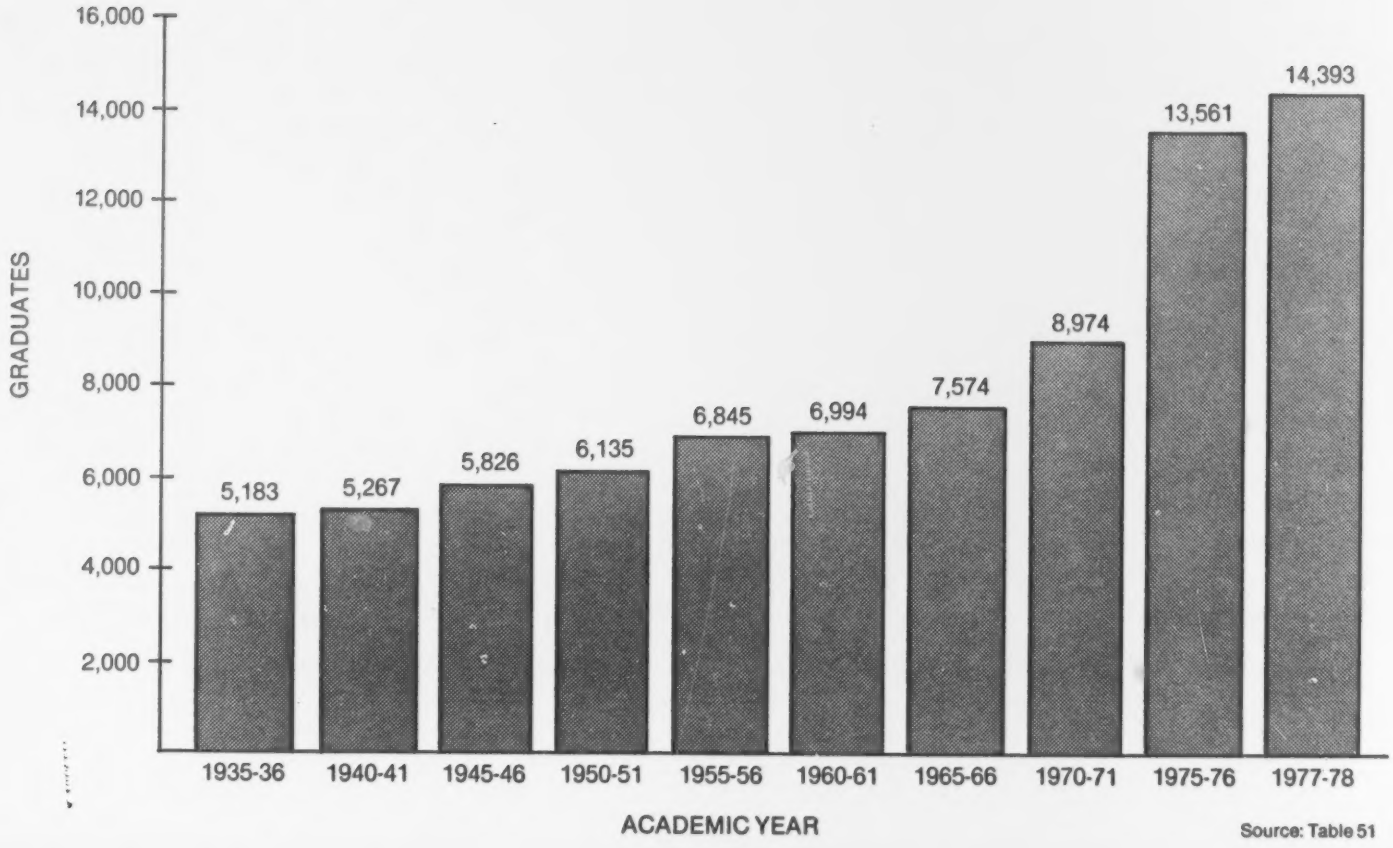
Table 51—Students and Graduates in Medical and Basic Science Schools, Selected Years 1935-1978

Year	Number of Schools[a]	Enrollment			Graduates
		Total	First Year	Intermediate Years	
1935-36	77	22,564	6,605	10,776	5,183
1940-41	77	21,379	5,837	10,267	5,275
1945-46	77	23,216	6,060	11,330	5,826
1950-51	79	26,186	7,177	12,874	6,135
1955-56	82	28,639	7,686	14,108	6,845
1960-61	86	30,288	8,298	14,996	6,994
1965-66	88	32,835	8,759	16,502	7,574
1967-68	94	34,538	9,479	17,086	7,973
1968-69	99	35,833	9,863	17,911	8,059
1969-70	101	37,669	10,401	18,901	8,367
1970-71	103	40,487	11,348	20,165	8,974
1971-72	108	43,650	12,361	21,738	9,551
1972-73	112	47,546	13,726	23,429	10,391
1973-74	114	50,886	14,185	25,088	11,613
1974-75	114	54,074	14,963	26,397	12,714
1975-76	114	56,244	15,351	27,332	13,561
1976-77	116	58,266	15,667	28,992	13,607
1977-78	122	60,456	16,134	29,929	14,393

[a]Prior to 1956-1957, schools in development were not included.

Source: Medical Education in the United States, 1977-1978, JAMA 240:2822, December 22/29, 1978.

Figure 23—Medical and Basic Science School Graduates, Selected Academic Years 1935-1978



Source: Table 51

Table 52—Women in U.S. Medical Schools, Selected Years 1949-1978

Academic Year	Women Applicants		Women in Entering Class		Total Women Enrolled		Women Graduates	
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
1949-50	1,390	5.7%	387	5.5%	1,806	7.2%	595	10.7%
1959-60	1,026	6.9	494	6.0	1,710	5.7	405	5.7
1964-65	1,731	9.0	786	8.9	2,503	7.7	503	6.8
1969-70	2,289	9.4	952	9.2	3,390	9.0	700	8.4
1970-71	2,734	10.9	1,256	11.1	3,894	9.6	827	9.2
1971-72	3,737	12.8	1,693	13.7	4,755	10.9	860	9.0
1972-73	5,480	15.2	2,315	16.9	6,099	12.8	924	8.9
1973-74	7,202	17.8	2,743	19.6	7,731[a]	15.4[a]	1,264	11.1
1974-75	8,712	20.4	3,260	22.3	9,786	18.1	1,706	13.4
1975-76	9,575	22.6	3,656	23.8	11,527	20.5	2,200	16.2
1976-77	10,244	24.3	3,876	24.7	13,059	22.4	2,611	19.2
1977-78	10,195	25.1	4,149	25.7	14,373	23.8	3,086	21.4

[a]Harvard did not provide enrollment figures.

Source: Medical Education in the United States 1977-1978, JAMA 240:2823, December 22/29, 1978.

Table 53—Minority Groups and Country of Origin of Foreign Students Enrolled in U.S. Medical Schools, 1972-1973 and 1977-1978

Student Group	1972-1973 Number	1972-1973 Percent of Total Enrollment	1977-1978 Number	1977-1978 Percent of Total Enrollment
U.S. Minority Groups	3,139	6.6%	5,514	9.1
Afro-American	2,593	5.5	3,651	6.0
Mexican-American	380	0.8	837	1.4
American Indian	68	0.1	205	0.3
Puerto Rican[a]	98	0.2	821	1.4
Foreign Nationals	638	1.3	255	0.4
Far East	208	0.4	34	*
Near and Middle East	35	0.1	87	0.1
Europe	64	0.1	193	0.3
Central America	170	0.4	38	*
South America	38	0.1		
Africa	112	0.2	119	.02
Oceania	11	*	6	*

[a]Mainland. University of Puerto Rico excluded from count.

*Less than 0.1%.

Source: Medical Education in the United States, 1972-1973, JAMA 226:912-913, November 19, 1973; 1977-1978, JAMA 240:2882 & 2884, December 22/29, 1978.

Table 54—Distribution of Medical Students by Parental Income and Control of Medical School, 1976-1977

Family Income	All Families		Medical Students					
			All Schools		Public Schools		Private Schools	
	Number[a]	Percent	Number	Percent	Number	Percent	Number	Percent
Total	56,702	100.0%	52,314	100.0%	30,604	100.0%	21,710	100.0%
Under $5,000	5,842	10.3	2,632	5.0	1,511	4.9	1,121	5.2
$5,000-$9,999	11,124	19.6	5,666	10.8	3,528	11.5	2,138	9.8
$10,000-$14,999	11,481	20.2	11,389	21.8	7,249	23.7	4,140	19.1
$15,000-$19,999	10,824	19.1	8,441	16.1	5,265	17.2	3,176	14.6
$20,000 or more	17,437	30.7	24,186	46.2	13,051	4.26	11,135	51.3
Estimated Median	$14,958		$22,000[b]		$21,500[b]		$25,000[b]	

[a] In thousands.

[b] Estimate.

Sources: Dube, W.F.: Descriptive Study of Enrolled Medical Students, 1976-1977. DHEW Publication No. (HRA) 7880. Hyattsville, Md.: Health Reasources Administration, 1978:55.

Money Income in 1976 of Families and Persons in the United States. Current Population Reports Series P60, No. 114, July 1978:63.

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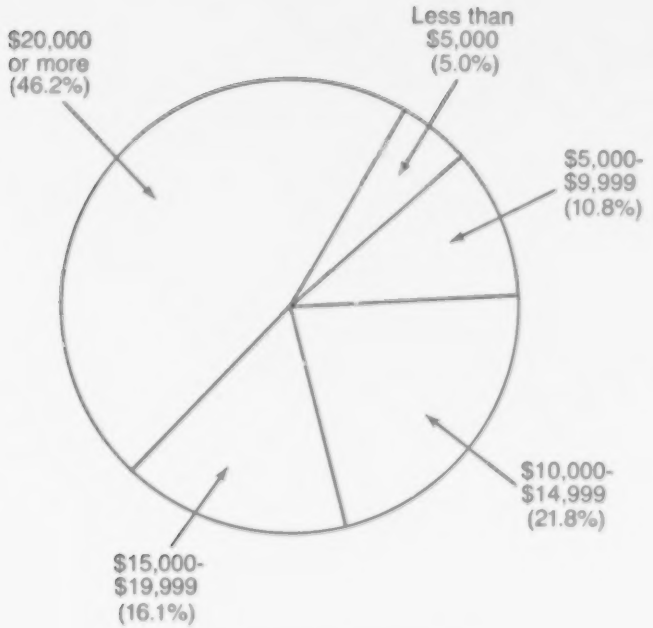
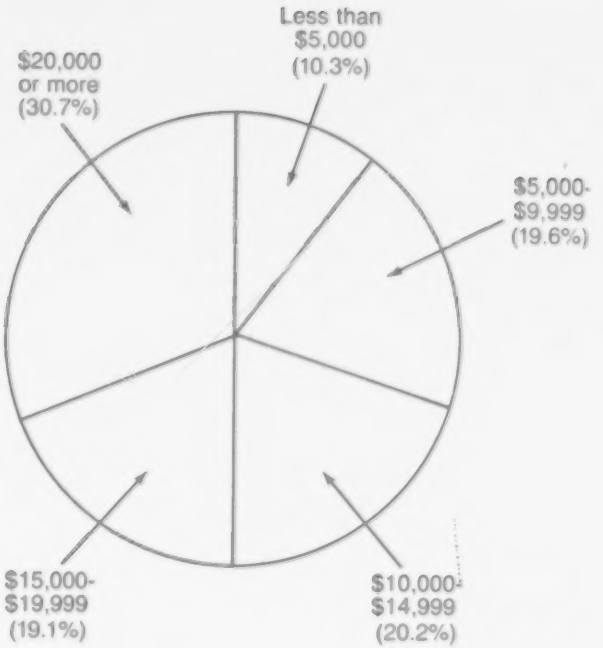
Figure 24—Percentage Distribution of Medical Students by Parental Income Compared to All Families, 1976-1977



PARENTS OF MEDICAL STUDENTS



ALL FAMILIES

Source: Table 54

Table 55—Approved Residency Programs, Total Positions Offered Filled and Vacant by Specialty, September 1, 1974

Specialty	Number of Approved Programs	Total Positions Offered	Total Positions Filled	Total Positions Vacant	Percent of Positions Filled
Total	4,640	57,681	52,685	4,996	91%
Anesthesiology	158	2,260	2,044	216	90
Family Practice	230	3,342	2,669	673	80
General Practice	40	333	286	47	86
Internal Medicine	425	11,353	11,024	329	97
Obstetrics/Gynecology	325	3,652	3,421	231	94
Pathology	459	3,404	2,835	569	83
Pediatrics	257	4,988	4,784	204	96
Psychiatry	256	5,012	4,370	642	87
Radiology	159	900	718	182	80
Surgery	415	7,802	7,354	448	94
All Other	1,916	14,635	13,180	1,455	90

Note: No more recent data are available.

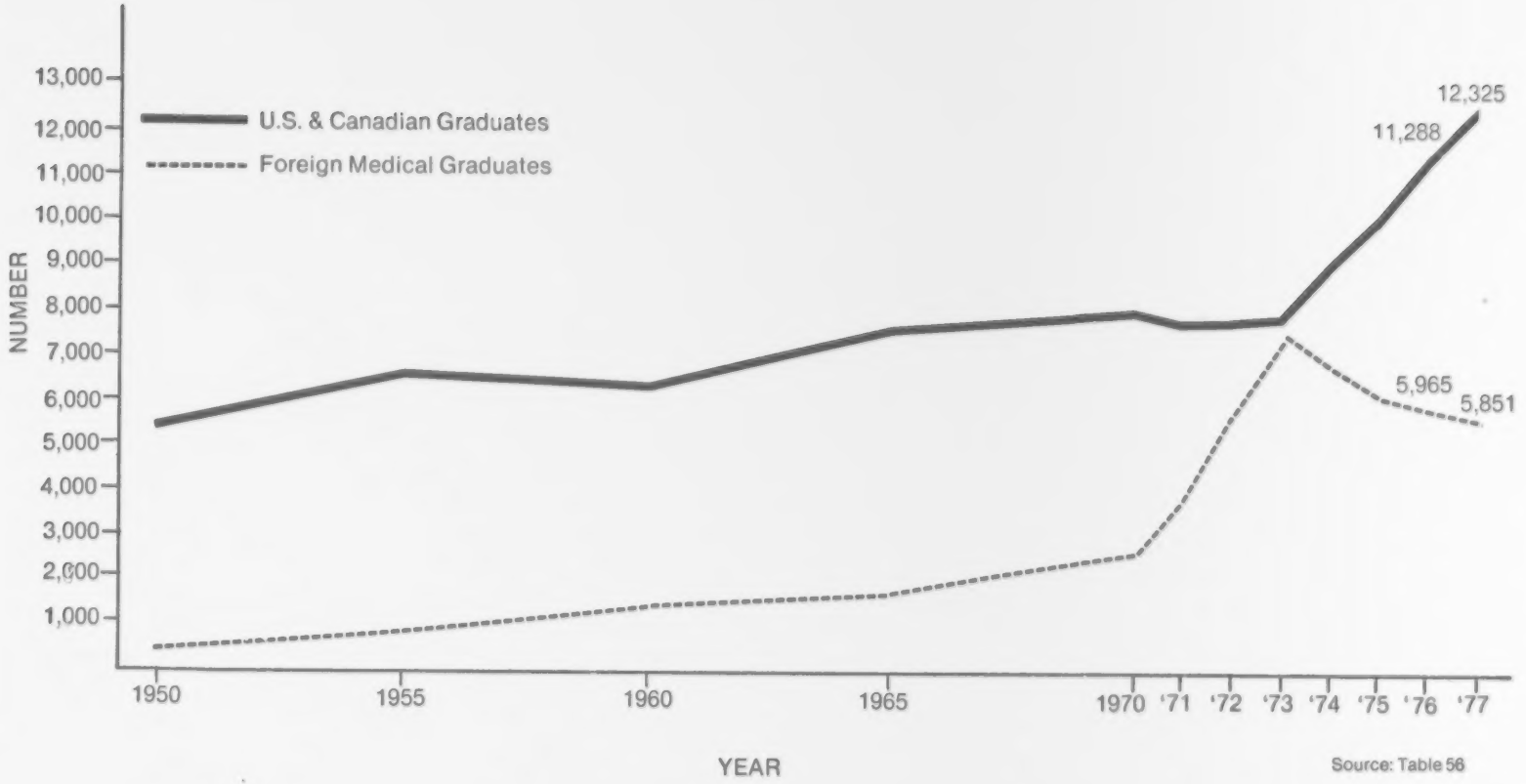
Source: Medical Education in the United States 1975-1976, JAMA 236:2977, December 27, 1976.

Table 56—Total and Foreign Medical Graduate Licentiates Representing Additions to the Medical Profession, Selected Years 1950-1977

Year	All Graduates			Foreign Medical Graduates		
	Total	Examination	Endorsement	Total	Examination	Endorsement
1950	6,002	4,609	1,393	308	267	41
1955	7,737	6,211	1,526	907	881	26
1960	8,030	6,225	1,805	1,419	1,383	36
1965	9,147	5,699	3,448	1,528	1,468	60
1969	9,978	6,074	3,904	2,307	2,196	111
1970	11,032	6,729	4,303	3,016	2,830	186
1971	12,257	7,743	4,514	4,314	4,131	183
1972	14,476	9,760	4,716	6,661	6,442	219
1973	16,689	10,752	5,937	7,419	7,247	172
1974	16,706	9,916	6,790	6,613	6,425	188
1975	16,859	8,990	7,869	5,965	5,838	127
1976	17,724	9,598	8,126	6,436	6,330	106
1977	18,175	8,836	9,939	5,851	5,790	61

Source: Physician Distribution and Medical Licensure in the U.S., 1977. Chicago: American Medical Association, 1979.

Figure 25—Licentiates Representing Additions to the Medical Profession: Selected Year 1950-1977



Source: Table 56

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